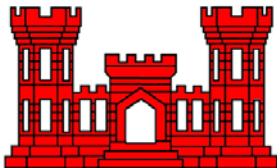


# **Volume 2**

## **Part 2**

### **Socioeconomic References**



**U.S. Army Corps of Engineers  
Memphis District**

---

DECLARATION OF HERSCHEL LOTT

---

State of Missouri

County of New Madrid

Declarant, Herschel Lott, declares under penalty of perjury, on personal knowledge as follows:

1. I am over 21 years of age and am competent to declare to the facts contained in this Declaration.
2. I live at 319 Powell St., New Madrid, Mo. 63869. I was born in New Madrid Missouri and have lived here all of my life.
3. I own and operate a welding and machine shop in New Madrid. My occupation has made me familiar with the equipment needs and repair needs of farmers and people who work and live in New Madrid.
4. In my lifetime, I have witnessed many times the devastation caused by flooding in Saint John's Bayou and particularly, the impact on the City of New Madrid and the farmers who live within Saint John's Bayou.
5. During periods of heavy rain fall, particularly in the spring and early summer, the ditches within the SJB area funnel the water into the bottle neck at the flood gates just out side of New Madrid.
6. When the water reaches flood levels within SJB, it is typical that the City of New Madrid is threatened by flooding as well. I have experienced flood waters so high that Main Street New Madrid could only be reached by motor boat.
7. During those times, the only way to save the city has been to force pump water across the levee into SJB. I have seen farmers working around the clock with their tractors running non-stop to operate pumps pulling water out of the city into SJB. Were it not for their work, the city would many times have been inundated with the rising waters causing significant destruction to the populace, infrastructure and business. In 2011, farmers from SJB brought in 8 to 10 tractors to operate pumps to save the city. Without that work round the clock work, the city would have been devastated. If it had not been for the farmers, there would have been 3 or 4 feet of water in New Madrid. Even
8. If the Mississippi River is rising at the same time that flooding is occurring within SJB, which often happens during high water in the spring and early summer when there are heavy rains all the way up to Benton, Missouri, the floodgates at the base of SJB are closed, causing the SJB flood waters to rise with no escape into the river. When the flood waters from the city are forced into the SJB at the same time the flood gates are closed, the resultant flooding inside SJB is increased causing substantial additional devastation to the towns and farms within SJB.
9. If there were pumps at the base of SJB, the flood devastation within SJB would be substantially decreased.
10. We have experienced problems throughout the years by not having the key to access the flood gate controls. I am personally aware of times when the Mississippi River fell below the elevation

that had required the gates to be closed and it took several hours and, in some circumstances, days before the gates could be opened to release flood waters from SJB into the river.

11. Also, when there have been mechanical problems with the gates or damage to them, the SJB Levee Board has taken charge to fix the problems and repair the gates. We have had difficulty in getting the Floodway Levee Board to the gates quickly to open the gates or to repair them when needed. For many years the Floodway Levee Board operated the gates with an old transmission off a Model A Ford automobile. The mechanism was completely inadequate.
12. In 1993, the gates were jammed by a log and could not be closed. Members of the SJB Levee Board had to break into the gate to pry the cover off the control box to reach a damaged screw. Farmers from farms in SJB assisted in straightening a screw that had been bent. The gates then had to be closed by hand because the mechanism was inoperable. However, there was backflooding into SJB for many days when the gates could not be closed. The backflooding occurred at the same time water was being pumped from the west levee out of the city into SJB. The results caused significant damage to the farmers and cities within the SJB. Thousands of acres were flooded far longer than should have happened.
13. I believe that if control of the gates had been in the hands of the SJB Board, the time delays and maintenance problems associated with operating the gates would have been significantly less. Even though the Floodway Levee Board ultimately paid the costs of the repair, I did not see anyone from the Board working on and repairing the damage. The keys to the gates are controlled by the Floodway Levee Board and when needed can only get them from the superintendent of the Board. This is a very inefficient process. In my opinion there is no reason not to allow the SJB Board, which is directly impacted by the timing of opening and closing the gates, to have a set of the keys.
14. In my line of work in the equipment repair business, I suffer great losses during the times of heavy uncontrolled flooding in SJB. When farmers are not working they do not use their machinery and I do not repair equipment. My business falls to a standstill until the flooding recedes. The installation of pumps would greatly improve my economic performance.
15. Further, declarant sayeth not. This Declaration is made by me under penalty of perjury.

Herschel E. Lott

Herschel Lott

Dated: 3-22-12



---

DECLARATION OF DAVID O. EDDY

---

State of Missouri

County of New Madrid

Declarant, David O. Eddy, on personal knowledge states the following to be true and correct under penalty of perjury:

1. I am 62 years old and am competent to make this declaration.
2. I have been farming inside of St. John's Bayou Basin for 38 years. I am a third generation farmer and farm in LaForge.
3. Water has been so high in SJB that people have had to go by boat or by mule to get to the grocery stores.
4. Dry Run Ditch cannot hold the water. With the huge storms in 2011, we had to pump water constantly to save the town of New Madrid. The pumping put the water into SJB and further raised the water level there.
5. We need to have pumps at the south end of St. John's Bayou to lower the water level during the high water years.
6. In 2011, I lost 200 acres of wheat and could not plant corn. Because I could not plant until July, I could only put in Soy Beans. Our revenues were down a lot because of the flooding.
7. My son, Daniel, is starting to farm in the SJB. He is concerned that the huge cost of investment in technology and equipment could wipe him out if he cannot get productive crops planted in time in SJB. The flooding puts his life investment in peril. An event like 2011 can wipe out a man like Daniel who is just starting a family.
8. In the high water years, the St. John's Floodway can get planted faster than the St. John's Bayou Basin. The water drains faster from the Floodway. In the Basin it does not run through the gates fast enough and flooding lasts much longer. It causes later planting. The rice land does not dry out fast and makes it impossible to plant rice.
9. If we could start pumping water out of the SJB as soon as the river level starts to recede, the time for putting in crops would be longer. We could put in many varieties of crops if the land were to dry out sooner.
10. It is necessary to starting getting the water out of the SJB as soon as the rain stops. If not, then when the next rain comes, it will be too late, you cannot keep up with the flooding.
11. It is necessary for us to be able to have direct access to the flood gates to control water and to have pumps installed at the south end of SJB to get water removed.
12. Otherwise, we will continue to be devastated by the floods. Our families and our communities need the pumps in place to protect our homes and our livelihood.



13. Further Declarant sayeth not. This Declaration is given under penalty of perjury.

David O Eddy

David O. Eddy

Dated: 3/22/12

---

Declaration of Sean Rutledge

---

State of Missouri

County of New Madrid

Declarant, Sean Rutledge, states that he has personal knowledge of the contents of this Declaration and he declares his statements to be true under penalty of perjury:

1. I am 36 years old and am competent to declare to the facts contained in this Declaration.
2. J. M. Rutledge is my father and I live in a house next to his.
3. He and I farm together. I have been farming with him since 1995. Farming is all we know and all we do for a living.
4. I have read my father's Declaration and am familiar with the information he has said. It is all true.
5. I also attend Mt. Olive Missionary Baptist Church like many of my neighbors and my family. The floods prevent us from attending services.
6. When our cotton crop last year could not be put in, I had to share with my father, the cost of the payments made to Allenburg Cotton Company.
7. Getting flooded out year after year in the St. John's Bayou has been hard on me and other members of the community. I believe that putting in the pumps would stop the devastation to our community and our livelihoods. We were told they would be put in and we need them to be.
8. Declarant, Sean Rutledge, declares under penalty of perjury that the facts stated in this affidavit are true and correct.

Further, Declarant sayeth not.



Sean Rutledge

Dated: 3-22-12

---

DECLARATION OF J. M. RUTLEDGE

---

State of Missouri

County of New Madrid

Declarant, J. M. Rutledge, declares, on personal knowledge, under the penalty of perjury, as follows:

1. I am 64 years of age and am competent to state the facts contained in this declaration.
2. I live at 23241 County Rd. 772, in the Parma Area of southern Missouri, at zip code 63070.
3. I own and farm approximately 220 acres in the St. John's Bayou. Part of the farm land I bought and part of it is the Bell Farm, with 66 acres in SJB. My wife is a Bell and the Bell Farm property has passed down through her family.
4. I have been farming in SJB since 1975. The Bells, and members of the African American community, have farmed in St. John's Bayou for many years.
5. I also started farming the Glass farm in 1982. I rented that farm. In about 1995, the part of the Glass farm east of the Farrenburg Levee in the St. John's Bayou area was put in conservation reserve. I still farm part of the Glass farm west of the Levee. During bad flood years, I could not get my crop in on time at the Glass farm in SJB. That caused me to lose substantial revenues in those years.
6. Almost every year, flooding has prevented me from getting my crop into the ground on time. Because of the flooding, in many years I have late crops and it is hard to get the crop in and hard to get it out. Many years, I have not been able to plant until around the 4<sup>th</sup> of July. That prevents me from planting double crop acres. In those bad flood years, I can only plant late soy beans.
7. Other farmers I know in the St. John's Bayou cannot get their crops in because of the floods. We are always running behind.
8. My son, Sean, and I farm land together in the SJB. Last year we had a contract with Allenburg Cotton Company in Memphis, Tennessee, to sell cotton. Because of the floods, we could not make the crop. My son and I had to pay \$35,000.00 on the contract to Allenburg. This was a total loss to us and a big percentage of our total net profit off of our farming operation. That was a very difficult economic result for us.
9. I am a member and Deacon of Mt. Olive Missionary Baptist Church, an active church with African American members located about a quarter of mile off of Dry Run Ditch in SJB. Many of church members live in the area. Some of the members travel from outside the SJB area to attend Church services.
10. During the bad flood years inside SJB, water has risen around the Church and has even gotten inside the Church building.
11. Many times during the bad flood years, Church members have been blocked from going to Church. Last year, for example, people could not attend services for over a month. The floods ran over the area roads and washed them out. The road that runs by the Church is Highway 720 that was under water for weeks last year. During high flood years, the road is frequently impassable.



12. Mr. William Bell is my brother in law. He lives on the Bells Farm on Highway 726, east of the Church. He does not farm, but is retired from the highway department. The floods occur all around the area where his house is located. Almost every road around his house has been flooded out in the bad flood years. He and his wife, Vera, had to leave home and live in a Sikeston Motel this past year. They both also attend the Mount Olive Church.
13. The flooding, year after year, causes me and my family members severe personal and economic hardships.
14. Putting a pumping station at the base of St. John's Bayou to get the flood waters out and into the river would protect our farms, our livelihoods, our homes, our church and our community from this terrible destruction.
15. Further declarant sayeth not. The facts set out in this in this declaration are true and correct and are stated as true under the penalty of perjury.

 3-22-2012  
J. M. Rutledge

---

DECLARATION OF LOUIS JOSEPH BROUGHTON

---

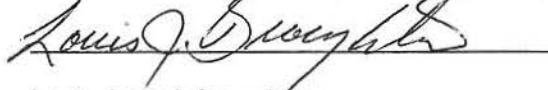
State of Missouri

County of New Madrid

Declarant, Louis Joseph Broughton, on personal knowledge states the following to be true and correct under penalty of perjury:

1. I am 67 years old and am competent to make this declaration.
2. I live at 735 Mitchell Avenue, New Madrid, Missouri 63869.
3. I have been a farmer all my life and grew up working on my father's farm. I have experienced the terrible flooding year after year in St. John's Bayou Basin.
4. In the high water flood years, I have seen where people who live in St. John's Bayou Basin have had to come to New Madrid to get their groceries by boat, because the roads are flooded over. I have had to go through Mr. J.W. Rice's yard by boat. His carpets and furniture have had to be taken up in his house to keep them from being ruined because of the high water.
5. I have been involved in pumping water from New Madrid over the Farrenburg Levee to save the town. I have seen sixteen pumps set up and running for three to four weeks at a time.
6. In 2011, we farmers put over 800 hours on our tractors pumping water 24 hours a day to save the town.
7. All of the water that was pumped into the SJB from New Madrid was concentrated in the south end of SJB and could not get out because the gates were closed and there were no pumps to get the water out.
8. This past year, I spent \$10,000.00 on diesel fuel that has not been reimbursed. I hope FEMA will pay that. I know other farmers who spent \$20,000.00 on fuel to run the pumps.
9. We lost our corn crop. Some farmers lost their wheat crop. We could not plant rice because of the flooding.
10. Planting was delayed until July. We lost substantial revenue because of the bad crop years during high floods.
11. I have watched the water levels for 20 years to read the gauges at the SJB flood gates for the Corps of Engineers. When the gates have to be opened or closed, the Floodway Levee Board has to be contacted to bring the key for access to the gate area. Many times there are delays waiting for the Levee Board to respond. Sunday is always a bad day for getting a rapid response. Sometimes the Levee Board has to go find someone to open the gates.
12. I live about two minutes from the gates and could operate them almost immediately if I had the key to get to them.

13. We need to have the pumps put in place inside SJB to remove the high flood waters and we should have the ability to access the flood gates to open or close them on a minutes notice.
14. Further Declarant sayeth not. This Declaration is given under penalty of perjury.

A handwritten signature in black ink, appearing to read "Louis J. Broughton", is written over a horizontal line.

Louis Joseph Broughton

Dated: 3-22-2012



---

DECLARATION OF J. W. RICE

---

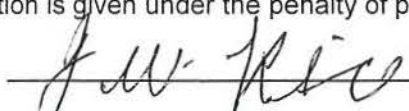
State of Missouri

County of New Madrid

Declarant, J. W. Rice, makes this declaration under penalty of perjury on personal knowledge as follows:

1. I am over 21 years of age and am competent to swear to the facts set out in this declaration.
2. I live at 77 County Highway 727, New Madrid, Missouri 63869. I have lived in New Madrid all of my life except for the time I served in the Army in the Pacific during World War II.
3. My family first began farming in 1866, when my grandfather bought land in what is now St. John's Bayou.
4. I remember when the front line levee was first built and when additional levees were constructed. I remember the 1927 flood, the 1937 flood, the 1953 flood, the 1958 flood, the 1973 flood, 1993 flood, 2011 flood. I remember how flooding in those years and other years destroyed our crops, our roads and our community.
5. My father told me that when the Farrenburg Levee was put in by the Corps of Engineers, pumps were supposed to be built to get the confined water out of the SJB area as soon as possible. When the flood gates were built in 1953 we were promised that pumps would be put in. They never have been. Because there are no pumps, the back-up of flood waters in the SJB has disrupted our farming operations and caused us substantial losses over the years.
6. Until the land dries after flood waters go down, we are not able to plant. In 2011, there was no planting in SJB until beginning in July. I could not raise corn or wheat. I did not get beans planted until the third week in July. In 2010, I got paid \$60.00 a bushel for beans. In 2011, I got paid \$10.00 a bushel for beans. If I could have planted earlier in 2011, I would have put in other crops and would have made a lot more money on my land.
7. There have been many times when flood waters have backed up into my yard. In 1937, water was 3 feet in my house. In 1973, the flood got to within 6 inches of my floor. In 2011, the water backed into my yard.
8. We pay for protection and do not get it. The flood gates at the base of the St. John's Bayou need to be properly maintained and operated. In my opinion the Floodway Levee Board does not respond fast enough when we need help. The Levee Board does not take care of the farmers in SJB.
9. If the pumps were installed at the base of the St. John's Bayou, in my opinion, all of the destruction to our homes, farms and communities in St. John's Bayou Basin would be stopped to a large degree.

Further, Declarant sayeth not. This Declaration is given under the penalty of perjury.



J. W. Rice

Dated: 7-21-12

DECLARATION OF DAVID WADE

---

Declarant, David Wade, declares under penalty of perjury, on personal knowledge, as follows:

1. I am over 21 years of age and am competent to declare to the facts contained in this Declaration.
2. On February 24, 2012, I interviewed Mr. Louis Wilburn, Jr., who lives at 3830 Highway 80, Matthews, Missouri 63867. The facts set out herein were stated to me by Mr. Wilburn.
3. Mr. Matthews reported to me that he is 88 years old and a lifelong resident in the St. John's Bayou Basin. His father lived in the Basin since 1880 and his grandfather moved to the Basin right after the end of the American Civil War.
4. He remembers his mother talking about the flood of 1913. He personally remembers the flood of 1927. It was cold in the winter with sleet and frozen rain. People had to drive their livestock north to get to high ground. Pigs had iceballs as big as a baseball frozen to their tails. There was a second rise of the flood waters in June and the farmers could not get feed for their livestock.
5. During the flood of 1937, his father had planted a winter supply of feed corn. When the water began to rise, his father had to get wagons and teams of horses to haul the corn out to gravel roads. Mr. Wilburn was a young boy at the time and had to stay all night at the corn crib to load up the wagons as they came in. His father was able to get the corn out before the flood waters got too high.
6. In 1937 the family was forced to move to a high ridge and took up residence in Dogwood Church.
7. After he married, he and his wife moved south of 80 highway in St. John's Bayou Basin. During the flood in 1950, he was forced to leave his home and his family moved into his sister's house. Every day he had to get to his farm by boat to feed chickens in the barn. He and his wife checked on their parents by boats. He remembers the waves in the field whitecapping and water freezing on him. His family was in the upstairs part of their house with a stove pipe running out of the upper window. Hogs were swimming in the waters and they could not pick them up.
8. In 2011, Mr. Wilburn stated that the flood waters in St. John's Bayou Basin topped over Highway 80. He had to sandbag around his house to keep water out. After the gates at the south of the St. John's Bayou Basin were closed, the water backed up in the Basin due to heavy rains. He could not get to Highway 80.
9. He has experienced problems because the flood gates have not been operated in a timely manner.
10. In the high flood years, his farming operations have been seriously affected by the flood waters. In 2011, Mr. Wilburn said he had 150 acres of corn planted and fertilized and all was lost. He lost \$20,000.00 in fertilizer costs alone. He lost half his revenue production on his corn crop. Because of the flooding, he had to plant soy beans.
11. The towns of East Prairie and Matthews were seriously impacted by the flood waters.
12. Further Declarant sayeth not.



David Wade





United States Department of Agriculture

Office of the Secretary  
Washington, D.C. 20250

JUN 21 2011

Mr. T.W. Medlin  
President  
St. John's Bayou Basin Drainage District  
Post Office Box 95, 501 Virginia  
New Madrid, Missouri 63869

Dear Mr. Medlin:

Thank you for your letter of May 11, 2011, concerning the need for a pumping station at the New Madrid floodgates on the Mississippi River. I apologize for the delayed response.

I recognize the devastating effect the recent flooding has had on property and lives, and understand the recovery effort will take time and resources.

Also, I appreciate your many efforts to secure flood protection for your community through proactive inquiries of available funds and resources. Implementing and constructing any structural feature, such as this proposed pumping station, requires careful planning and coordination with all Federal, State, and local agencies.

Although the U.S. Department of Agriculture (USDA) does not have financial resources to provide immediate, direct relief, USDA's Natural Resources Conservation Service is working with the Memphis District U.S. Army Corp of Engineers and the Environmental Protection Agency to develop a long-range solution to this problem.

I share your concern and interest in the availability of assistance to construct a pumping station. I urge you to use all authority available as a legal entity in Missouri and continue your pursuit of a pumping station for the St. John's Bayou Basin Drainage District.

Again, thank you for writing. I appreciate that you took the time to contact me about this very important issue.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Vilsack", written in a cursive style.

Thomas J. Vilsack  
Secretary

*Missouri  
Department  
of Transportation*



16894 State Highway 25  
Chaffee, MO 63740  
(573) 794-2986

[www.modot.state.mo.us](http://www.modot.state.mo.us)

**Stan Johnson, Area Engineer**

June 21, 2011

Mr. Scott Matthews  
St. John's Drainage District  
717 Tanner St.  
Sikeston, MO 63801

Dear Mr. Matthews:

As you know, MoDOT has exerted quite an effort to keep Interstate 55 safe and passable during the recent flooding.


The existing system of levees and pump protecting I-55 was designed after the historic 1973 floods when the interstate almost closed. We have activated it a few times since then when St. John's ditch is high because the gates are closed and there is significant rainfall in the St. John's basin. We activated the system again this spring.

The difference this year was the continued rise of the water. This year, we had to raise the levees approximately two feet and add additional sandbags along the interstate to keep it passable. There were locations where the water was almost a foot higher than the high side of the curve. If these levees had failed, we would not have been able to keep the interstate open and would have had to detour traffic up US 61, a two lane roadway. The cost so far for these flood relief efforts is approximately \$163,000.

Any efforts that the Drainage District could make to alleviate the potential for flooding at I-55 would go far to enhance motorist safety.

If you have any questions or need further information, please feel free to call me at (573) 225-3401.

Sincerely,



Stan Johnson

cc: File



U.S. Department  
of Transportation  
**Federal Highway  
Administration**

**Missouri Division**

3220 W. Edgewood, Suite H  
Jefferson City, Missouri 65109  
(573) 636-7104  
Fax (573) 636-9283  
Missouri.FHWA@fhwa.dot.gov

June 21, 2011

T.W. Medlin  
T.W. Medlin Farms, Inc.  
P.O. Box 95  
New Madrid, MO 63869

Dear Mr. T.W. Medlin:


Thank you for your letter of June 17, 2011, inviting us to a meeting between the St. John's Bayou Basin Drainage District and the United States Army Corps of Engineers (USACE) on June 22, 2011. Unfortunately we were unable to meet with you on this short notice due to other commitments. We could meet with you at a future date and time to discuss the flooding issues with I-55, and offer the following comments concerning this flooding.

The Federal Highway Administration is concerned with the flooding of I-55 near mile marker 59 due to backwater trapped within the St. John's Bayou Basin Drainage District. This flooding creates disruptions to traffic on the interstate system, forcing interstate traffic to utilize detours on routes with less traffic capacity and fewer lanes. The flooding also creates a situation where the decision is required as to when to continue pumping and when to abandon pumping for safety, and succumbing to the flooding. During the flooding event in the past months the work to keep the interstate open to traffic required substantial resources in sandbagging and pumping operations. Luckily, this time, the efforts and the backwater elevation allowed I-55 to remain open. In 1972-73, this section of interstate was closed due to backwater flooding.

FHWA would be in support of solutions to eliminate or reduce the likelihood of flooding on I-55 at this location.

If you desire additional information please contact me by mail or by telephone.

Sincerely yours,



Edgardo Cordero  
Assistant Division Administrator





# **Waters Engineering, Inc.**

*Civil Engineering & Land Surveying*

---

Post Office Box 567  
908 S. Kingshighway  
Sikeston, Missouri 63801

E-mail: [main@waterseng.com](mailto:main@waterseng.com)  
573/471-5680  
Fax: 573/471-5689

June 17, 2011

Mr. Ted Medlin  
President  
St. John's Bayou Basin Drainage District  
501 Virginia Avenue  
New Madrid, MO 638698

Re: St. John's Bayou Basin

Dear Mr. Medlin:

This letter is offered in response to your request for an opinion from our firm regarding the effects on public infrastructure resulting from the absence of a pumping system for the St. John's Bayou Basin.

Our firm has a 90-year history of providing engineering services in Southeast Missouri, and we have been involved in the development of the roads, drainage, bridges, water and sewer system of every public body in the St. John's Bayou Basin.

Based upon our first-hand knowledge of these systems we offer the following observations on the impacts of prolonged flooding caused by the lack of a St. John's Bayou pumping station:

1. Roadways.

Extended submergence of road beds is detrimental to the integrity of both the surfacing and structural bases of roadways. Repair of these types of failures cannot be properly made with a simple surface topping, but rather requires restoration of the entire support base.

Most often the local governments do not have adequate funds or staff to make proper repairs, and the results are a long-term degradation of the quality of the roadway system and continued high maintenance expenses.

2. Drainage Ditches.

As flow backs-up in the Bayou, the drainage ditch side slopes become saturated, then lose strength and become prone to subsidence failures. The velocities induced along these saturated ditch bank slopes when the outlet at New Madrid re-opens compounds the failure problem.

Once slope failures occur they are difficult to repair and each failure point becomes an on-going liability for the drainage authorities, and again more increases in the costs for maintenance are generated.

3. Bridges.

Inundation of bridges promotes both structural damage and approaching roadway failures.

There are still a significant number of bridges with timber decks and structural members, and these bridges do not fare well with submergence, and some substantial repair or replacement generally results.

Bridge and approaching roadway failures present safety issues that often result in the need for bridge closures. These closures can be for extended periods that can have serious impacts on the ability to access homes, farm operations and farmland around those failures.

One of the main drains on the budget for County governments is the up-keep of their bridges, and the effects of the lack of a pumping station is to add further needs to an already challenging list for needed bridge improvements.

4. Rural Water & Sewer Systems.

Much of the St. John's Bayou Basin is still not served by a Public Water Supply District, and the residences in such areas rely upon individual shallow wells, 15 to 30 feet in depth, for drinking water.

These wells are generally located near on-site sewage disposal systems. During flooding periods the areas where drinking water is obtained and the areas used for on-site sewage disposal become directly linked through the common high ground water.

Wastewater treatment in the rural areas is provided by individual septic tanks with tile fields. During periods of flooding in the St. John's Basin these tile fields do not work which results in surfacing of wastewater.

The surfacing of waste water and the contamination of the drinking water supplies represent very serious public health issues that can be directly attributed to high ground water conditions enhanced by the prolonged inundation in the St. John's Bayou Basin.



Once slope failures occur they are difficult to repair and each failure point becomes an on-going liability for the drainage authorities, and again more increases in the costs for maintenance are generated.

3. Bridges.

Inundation of bridges promotes both structural damage and approaching roadway failures.

There are still a significant number of bridges with timber decks and structural members, and these bridges do not fare well with submergence, and some substantial repair or replacement generally results.

Bridge and approaching roadway failures present safety issues that often result in the need for bridge closures. These closures can be for extended periods that can have serious impacts on the ability to access homes, farm operations and farmland around those failures.

One of the main drains on the budget for County governments is the up-keep of their bridges, and the effects of the lack of a pumping station is to add further needs to an already challenging list for needed bridge improvements.

4. Rural Water & Sewer Systems.

Much of the St. John's Bayou Basin is still not served by a Public Water Supply District, and the residences in such areas rely upon individual shallow wells, 15 to 30 feet in depth, for drinking water.

These wells are generally located near on-site sewage disposal systems. During flooding periods the areas where drinking water is obtained and the areas used for on-site sewage disposal become directly linked through the common high ground water.

Wastewater treatment in the rural areas is provided by individual septic tanks with tile fields. During periods of flooding in the St. John's Basin these tile fields do not work which results in surfacing of wastewater.

The surfacing of waste water and the contamination of the drinking water supplies represent very serious public health issues that can be directly attributed to high ground water conditions enhanced by the prolonged inundation in the St. John's Bayou Basin.

5. Public Sewer Systems.

High water tables are the enemies of public sewer systems. The prolonged inundation from the backwater in the St. John's Bayou Basin results in such high water tables.

The infiltration of groundwater through pipe joints and leaking manholes cause excessive flows at wastewater treatment plants. These flows can result in the need for substantial sewer system rehabilitation programs and for the upgrading of treatment plants to handle the added flow.

With high water tables the soil around the underground sewer system migrates through leaks and enters the sewer system. The results are that the sewer collection system and treatment works become engorged with sand which must be removed to restore the system to proper service.

The migration of soil also causes holes to develop over sewer mains, which causes the functional failure of the collection system. These problems are expensive to repair, cause disruption of the land use above and around the sewer failures and also bring untreated wastewater within the proximity of people.

6. Economic Impact on Public Bodies.

The total economic impact of the extended high water levels in the St. John's Bayou Basin are difficult to determine because expenses are required to cope with both short and long-term costs.

The short-term costs to correct the immediately noticeable damage to public infrastructure are normally readily identified and quantified. Unfortunately it is our opinion that the long-term costs for operation, maintenance and replacement of public works facilities due to the effects of the long-term flooding may be just as high.

7. Combined Economic Effects.

It is generally accepted that the economy of Southeast Missouri is rooted in agriculture, and that the fate of the balance of the economy in the region follows that of agriculture.

There should be little argument that the ability of the agricultural industry to thrive is threatened by the lack of a pumping station outlet for the St. John's Bayou Basin.



The ability of public bodies to generate the income needed to operate is tied to their tax income or the ability of their customers to pay for services. Both of these income sources depend on a flourishing economy.

The adverse economic impacts of long-term flooding increase operational costs while diminishing the capabilities to generate revenue for public bodies. This combination of factors has placed many of the public bodies in difficult financial situations.

8. Recommendation Solution.

To significantly reduce the adverse impacts from the long-term flooding in the St. John's Bayou Basin would require the construction of a pumping system. The system should be designed to flow to New Madrid and should have adequate pumping capacity to prevent objectionable long-term ponding of water.

We would suggest that the flow rainfall and flow data from the 2011 flooding event be considered as the design event for the pump station design.

We hope you will find this information to be helpful. The lack of pumps in the St. John's Bayou Basin generates a multitude of problems for our public sector clients, and life would certainly be better for all if they could be constructed.

Sincerely,

**WATERS ENGINEERING, INC.**

A handwritten signature in cursive script, appearing to read "John Chittenden".

John Chittenden, PE  
President

## United States Department of Agriculture



Natural Resources Conservation Service  
480 West Jackson Trails  
Jackson, Missouri 63755-2665

June 8, 2012

Mr. Ted Medlin,  
501 Virginia Avenue  
New Madrid, MO 63869

Dear Mr. Medlin,

I understand you are gathering information to support the installation of pumps at the St. John's Ditch outlet works. It's my pleasure to provide any information I have regarding flood damages.

On March 18 2008 the bootheel suffered a catastrophic single day rainfall event of 8" to 14", falling on already saturated soils. NRCS and your district, St. John's Bayou Basin, partnered in the completion of eight projects through USDA's Emergency Watershed Program (EWP) to restore district drainage ditches. Your district completed work totaling \$3,131,143 in total project cost. The project was very well managed by your drainage district. I was honored to accompany you as we hosted US Secretary of Agriculture Tom Vilsack in 2009. Secretary Vilsack commended the projects for their efficiency and timeliness.

In 2011 the Mississippi Valley suffered another record flood. I've attached my daily flood report from 5/11/2011 where I estimated that 85,000 acres were flooded within the St. John's Bayou Basin area. I was on the helicopter flight referenced in the report and assure you that the 85,000 acre figure is an accurate estimate. I estimate that flooded cropland acreage totaled about 76,000 acres. All of these acres suffered from delayed planting. There were significant acreages of wheat destroyed by flooding, but I don't have a figure for those losses. I heard estimates of average cropland economic losses of \$100 to \$150/acre. The midpoint of these values would yield an estimated crop loss of \$9,500,000 based upon field estimates.

This spring USDA and St. John's Bayou Basin entered into a EWP project agreement to repair some of the damages caused to district ditches by the 2011 flood. The \$517,061 project is only for the smaller ditches. We did not inventory the damage to St. John's Ditch, but based on damage to other ditches in the region, I would not be surprised if at least 50% of the 2008 improvements were destroyed, or \$1,550,000 in damages.

Summary of Estimated Damages due to 2011 St. John's Bayou Basin flooding (Agricultural damages, not counting agricultural structures)

|             |  |
|-------------|--|
| \$9,500,000 | Cropland damages                           |
| \$1,550,000 | St. John's Ditch estimated damage          |
| \$517,061   | Damages to other district drainage ditches |

You asked for my thoughts as to whether the installation and operation of a pumping station at the St. John's Bayou Basin outlet would have reduced flooding. In my opinion the presence and operation of suitably sized, permanent pumps would have substantially reduced flooding in the basin in 2008 and 2011. Interstate 55 would not have been threatened with closure, significantly fewer homes and businesses would have been flooded, and agricultural damages would have been measurably reduced. I believe that the 2011 mobilization of temporary pumps by the US Army Corps of Engineers, executed at considerable cost and effort by the Corps, illustrates that pumps are the only viable means to address the flooding problem. The St. John's Bayou Basin has suffered two severe floods in the past five years. The installation and operation of suitably sized, permanent pumps would serve to prevent a re-occurrence of large scale flooding in the future.

Thank you,  
Mark E. Nussbaum, P.E.  
Area Engineer, USDA-NRCS, Jackson, MO

cc. Nancy Walker, District Conservationist, New Madrid, MO

**MARTIN, TATE, MORROW & MARSTON, P.C.**

**ATTORNEYS AND COUNSELORS**

INTERNATIONAL PLACE, TOWER II  
SUITE 1000  
6410 POPLAR AVENUE

MEMPHIS, TENNESSEE 38119-4839

DAVID WADE  
[DWADE@MARTINTATE.COM](mailto:DWADE@MARTINTATE.COM)

(901) 522-9000  
FAX (901) 527-3746

June 27, 2012

*Via E-Mail and U.S. Mail*

Danny Ward  
Project Manager  
U.S. Army Corps of Engineers  
CEMVM-PM-P  
167 N. Main, Room B-202  
Memphis, TN 38103-1894  
[daniel.d.ward@usace.army.mil](mailto:daniel.d.ward@usace.army.mil)

Re: St. John's Bayou Basin

Dear Mr. Ward:

On behalf of the St. John's Bayou Basin Drainage District, I am forwarding the listed documents for consideration by the Corps of Engineers in preparation of the Environmental Impact Statement regarding the pumping stations to be located in the District.

The documents are:

1. Report dated June 21, 2012, from Dr. Michael Aide, Chair of the Department of Agriculture for Southeast Missouri State University, detailing damages to the crop production due to flooding in the Drainage District including his opinion that the damages would have been minimized had there been in place a system to remove impounded backwater flooding.
2. Report dated June 8, 2012, from Mark E. Nussbaum, Area Engineer, USDA-NRCS, Jackson, MO, summarizing estimated agricultural damages due to 2011 St. John's Bayou Basin flooding including his opinion that the installation of permanent pumps would have substantially reduced flooding.

**MARTIN, TATE, MORROW & MARSTON, P.C.**

Danny Ward letter

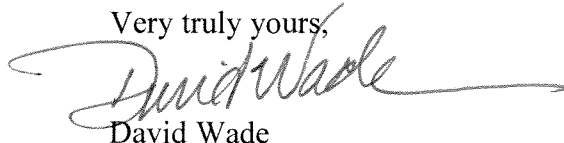
June 27, 2012

Page 2

3. Letter of June 15, 2012, from Anita J. Dunning, State Director of the United States Department of Agriculture Rural Development Missouri stating that after the flood of 2011, the St. Johns Bayou Basin pumping station should be a top priority.
4. Declarations of William J. Cavins, Richard Phillips, Jr., Robert Henry, Bryan Palmer, and Karen Jones. They detail the destruction the flooding has caused to wildlife and wildlife habitat, business, commercial and agricultural interests, subdivisions and residential areas and to the community as a whole. The emphasis is on the obvious need for the pumping station to alleviate the damage caused by the flooding. I am able to obtain many more declarations that will substantiate the statements made by these witnesses and the others previously provided to you.

Please consider these materials as you complete your work on the proposed EIS. Should you have any questions, please feel free to contact me.

Very truly yours,

A handwritten signature in dark ink, appearing to read "David Wade", with a long horizontal flourish extending to the right.

David Wade

Enclosures

cc: St. John's Bayou Drainage District Board



Report dated June 21, 2012, from Dr. Michael Aide



June 21, 2012

Mr. David Wade  
Martin, Tate, Morrow & Marston P.C.  
International Place, Tower II  
6410 Poplar Avenue, Suite 1000  
Memphis, TN 38119-4839

Dear Mr. Wade,

The following data is generated using a simulation program developed for the St. John's watershed. The intent of the simulation is to determine the crop production in the St. John's watershed based on a normal cropping year and compares that data with the actual production patterns of 2011. Table 1 represents the estimated crop values of the St. John's watershed partitioned by the acreages of the counties within the watershed. The percent of non-cropland in those land parcels were subtracted from the county-watershed acreages. Table 2 represents crop production values for the actual St. John's watershed 2011 cropping year.

The crops selected were corn, soybeans, wheat, rice, cotton, and grain sorghum. These six crops represent more than 90% of the crops cultured in the watershed. Crop prices were established for May 5, 2011. First planting dates were optimum for the normal year simulation and for the actual 2011 planting year were established at July 1, 2011 for the southern portion of the watershed and June 1 for the northern portions of the watershed. These dates correspond to discussions with large-sale growers in the watershed. The delay in planting in 2011 was attributed to water saturated soil conditions as a result of backwater flooding.

The wheat crop in the watershed was an extremely poor yielding crop in 2011 because of cool temperatures during tillering, water saturation during grain fill, inability to apply fungicides and Septoria (*Mycosphaerella graminicola* – a wheat disease promoted by wetness).

Crop yields were affected by two conditions present in 2011. Cotton, rice and corn production was not advised because of the late planting date, particularly in the southern portion of the watershed. Acres not planted to corn, rice and cotton were allocated to soybeans. This switch is collaborated with discussions with CCA advisors and land owners. The corn, soybeans and other crops that were planted manifested yield reductions because of post-ideal planting dates. The algorithms employed to predict post ideal planting date yields were adapted from publications arising from the University Missouri and Ohio State University. The acreage devoted to soybeans increased proportionally to the transition away from cotton, rice and corn.

The production reductions were greatest in the southern portion of the St. John's watershed because of water transport from the northern portion of the watershed. Additionally the soils of the northern portion of the watershed have better drainage, higher elevation and a course texture (sandy loam to loam), whereas the soils of the southern portion of the St. John's watershed are poorly-drained, heavy-textured Vertisols (silty clay loam, silty clay, clay). If a system to vacate impounded backwater flooding in the St. John's Basin watershed has been in place and timely activated, the damages sustained in 2011 from delayed planting, low yields and loss of profits would have been minimized.

Very truly yours,

A handwritten signature in black ink, reading "Michael Aide". The signature is written in a cursive, flowing style with a large initial "M" and a long, sweeping underline.

Michael Aide Ph.D, CPSS  
Chairperson, Department of Agriculture  
Southeast Missouri State University

Table 1. Estimated crop values for a normal year by county in St. John's Watershed crop (\$ million)

| County      | Corn     | Soybean  | Cotton  | Rice    | Sorghum | wheat   | total    |
|-------------|----------|----------|---------|---------|---------|---------|----------|
| New Madrid  | \$29.01  | \$39.83  | \$37.24 | \$14.79 | \$2.07  | \$3.97  | \$126.91 |
| Mississippi | \$45.45  | \$69.43  | \$0.00  | \$1.37  | \$2.89  | \$14.52 | \$133.66 |
| Scott       | \$33.32  | \$22.86  | \$2.20  | \$0.75  | \$0.74  | \$8.72  | \$68.59  |
| total       | \$107.78 | \$132.12 | \$39.44 | \$16.91 | \$5.70  | \$27.21 | \$329.16 |

Table 2. Estimated crop values for 2011 because of delayed planting by county in St. John's Watershed crop (\$ million)

| County      | Corn  | Soybean | Cotton | Rice | Sorghum | wheat | total  |
|-------------|-------|---------|--------|------|---------|-------|--------|
| New Madrid  | 0.00  | 84.95   | 0.00   | 0.00 | 2.07    | 0.00  | 87.02  |
| Mississippi | 23.44 | 69.43   | 0.00   | 1.37 | 2.89    | 0.00  | 97.13  |
| Scott       | 17.19 | 24.39   | 0.00   | 0.75 | 0.74    | 0.00  | 43.07  |
| total       | 40.63 | 178.77  | 0.00   | 2.12 | 5.70    | 0.00  | 227.22 |



Table 3. Estimated crop value differences between normal and 2011 by county in St. John's Watershed crop (\$ million)

| County      | Corn     | Soybean | Cotton   | Rice     | Sorghum | wheat    | total    |
|-------------|----------|---------|----------|----------|---------|----------|----------|
| New Madrid  | -\$29.01 | \$45.12 | -\$37.24 | -\$14.79 | \$0.00  | -\$3.97  | -\$39.89 |
| Mississippi | -\$22.01 | \$0.00  | \$0.00   | \$0.00   | \$0.00  | -\$14.52 | -\$36.53 |
| Scott       | -\$16.13 | \$1.53  | -\$2.20  | \$0.00   | \$0.00  | -\$8.72  | -\$25.52 |
| total       | -67.15   | 46.65   | -39.44   | -14.79   | 0       | -27.21   | -101.94  |

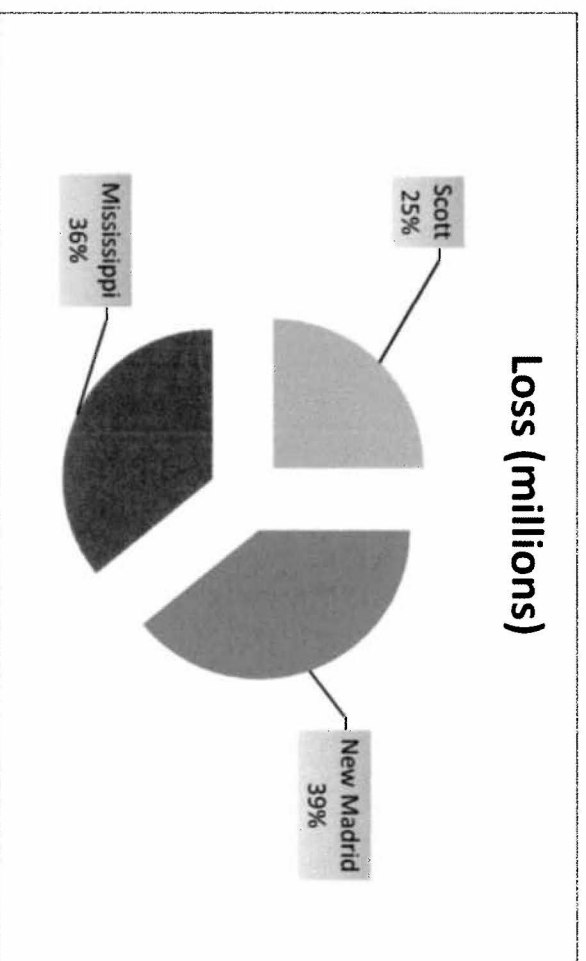


Figure 1. Crop loss estimates for selected counties in the St. John's watershed.

Report dated June 8, 2012, from Mark E. Nussbaum

United States Department of Agriculture



Natural Resources Conservation Service  
480 West Jackson Trails  
Jackson, Missouri 63755-2665

June 8, 2012

Mr. Ted Medlin,  
501 Virginia Avenue  
New Madrid, MO 63869

Dear Mr. Medlin,

I understand you are gathering information to support the installation of pumps at the St. John's Ditch outlet works. It's my pleasure to provide any information I have regarding flood damages.

On March 18 2008 the bootheel suffered a catastrophic single day rainfall event of 8" to 14", falling on already saturated soils. NRCS and your district, St. John's Bayou Basin, partnered in the completion of eight projects through USDA's Emergency Watershed Program (EWP) to restore district drainage ditches. Your district completed work totaling \$3,131,143 in total project cost. The project was very well managed by your drainage district. I was honored to accompany you as we hosted US Secretary of Agriculture Tom Vilsack in 2009. Secretary Vilsack commended the projects for their efficiency and timeliness.

In 2011 the Mississippi Valley suffered another record flood. I've attached my daily flood report from 5/11/2011 where I estimated that 85,000 acres were flooded within the St. John's Bayou Basin area. I was on the helicopter flight referenced in the report and assure you that the 85,000 acre figure is an accurate estimate. I estimate that flooded cropland acreage totaled about 76,000 acres. All of these acres suffered from delayed planting. There were significant acreages of wheat destroyed by flooding, but I don't have a figure for those losses. I heard estimates of average cropland economic losses of \$100 to \$150/acre. The midpoint of these values would yield an estimated crop loss of \$9,500,000 based upon field estimates.

This spring USDA and St. John's Bayou Basin entered into a EWP project agreement to repair some of the damages caused to district ditches by the 2011 flood. The \$517,061 project is only for the smaller ditches. We did not inventory the damage to St. John's Ditch, but based on damage to other ditches in the region, I would not be surprised if at least 50% of the 2008 improvements were destroyed, or \$1,550,000 in damages.

Summary of Estimated Damages due to 2011 St. John's Bayou Basin flooding (Agricultural damages, not counting agricultural structures)

|             |  |
|-------------|--|
| \$9,500,000 | Cropland damages                           |
| \$1,550,000 | St. John's Ditch estimated damage          |
| \$517,061   | Damages to other district drainage ditches |

You asked for my thoughts as to whether the installation and operation of a pumping station at the St. John's Bayou Basin outlet would have reduced flooding. In my opinion the presence and operation of suitably sized, permanent pumps would have substantially reduced flooding in the basin in 2008 and 2011. Interstate 55 would not have been threatened with closure, significantly fewer homes and businesses would have been flooded, and agricultural damages would have been measurably reduced. I believe that the 2011 mobilization of temporary pumps by the US Army Corps of Engineers, executed at considerable cost and effort by the Corps, illustrates that pumps are the only viable means to address the flooding problem. The St. John's Bayou Basin has suffered two severe floods in the past five years. The installation and operation of suitably sized, permanent pumps would serve to prevent a re-occurrence of large scale flooding in the future.

A handwritten signature in black ink, appearing to read "Mark E. Nussbaum".

Thank you,  
Mark E. Nussbaum, P.E.  
Area Engineer, USDA-NRCS, Jackson, MO

cc. Nancy Walker, District Conservationist, New Madrid, MO



Letter of June 15, 2012, from Anita J. Dunning



**United States Department of Agriculture  
Rural Development  
Missouri**

June 15, 2012

Colonel Vernie L. Reichling  
Commander, Memphis District  
Corp of Engineers, Memphis  
167 N. Main, B202  
Memphis, TN 38103-1894

Dear Colonel Reichling:

Please make the St. Johns Bayou Basin pumping station a main concern as an early component of the St. Johns/New Madrid Floodway Project. After the flood of 2011, it became evident that the pumping station should be a top priority. Your attention to this matter is greatly appreciated.

Sincerely,

A handwritten signature in black ink, appearing to read "Anita J. Dunning".

Anita J. Dunning  
State Director

601 Business Loop 70 West • Parkade Center, Suite 235 • Columbia, MO 65203  
Phone: (573) 876-0976 • Fax: (573) 876-0977 • TDD: (573) 876-9480 • Web: <http://www.rurdev.usda.gov/mo>

***Committed to the future of rural communities.***

"USDA is an equal opportunity provider, employer and lender."  
To file a complaint of discrimination write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W.,  
Washington, DC 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD).

## Declarations

## DECLARATION OF WILLIAM J. CAVINS

---

State of Kentucky

County of Lyon


Declarant William J. Cavins makes this declaration under penalty of perjury and states as follows:

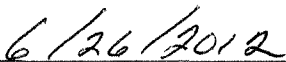
1. I am over 21 years of age and am competent to set forth this declaration of facts based on my own personal knowledge.
2. I live in Eddyville, Kentucky.
3. In 2003, I purchased over 2000 acres of land within the St. John's Bayou Basin Drainage District (the "Basin"). After some sales of the land, I now own approximately 1600 acres in the Basin.
4. I granted a permanent easement to the United States Government under the federal Wetlands Reserve Program ("WRP"). All of the acres owned by me in the Basin were put under the WRP.
5. The acres are set aside to create environmentally sensitive wetland areas for preservation of wildlife habitat. They have been permanently removed from crop production under WRP.
6. The federal government allocated approximately \$2 million for the cost of the original restoration project that included planting native trees and grasses, placement of levees to retain water, and basic habitat re-creation.
7. After the purchase of the WRP site, we acquired a lodge and installed a levee around the lodge to protect it from flooding. After the flood of 2008, I increased the height of the levee to make it at least a foot higher than the 2008 flood stage. In spite of that additional construction, the flood of 2011 topped the levee by over one and a half feet. Over 5 feet of water standing flooded into the lodge, causing extensive damage.
8. The 2011 flooding ruined many of the habitat structures that had been developed under the program to protect wildlife. Natural grasses and nesting areas were washed away. Native bird populations, including wild quail and turkey, lost their natural nesting grounds and were displaced. The deer population was forced out of its nesting grounds into higher ground to escape the flood waters. Many deer sought high ground on the levees and became stranded due to the high water. The levees did not contain enough food to sustain them. Many deer starved as a result.
9. The destruction to wildlife was devastating.
10. This kind of destruction should never have happened. When the levees were originally built, all of the drainage waters were directed to a narrow point into the southern part of the Basin. During heavy rains that frequent the area, the run-off waters course south through the drainage district and back up into the Basin, where the water is retained because it has no escape route when the Mississippi also is at high



levels. An important part of the plans for creating the Basin included a pumping system to remove the backed up water as quickly as possible. As currently operated without a pumping system the engineering design for the correct operation of the Basin flood controls is thwarted.

11. It is absolutely essential to the natural fauna and flora in the Basin that the pumps be installed to remove the flood waters out of the Basin as soon as possible. Installation of the pumps will minimize the negative impact on wildlife that make home in the forests and fields of the St. John's Bayou Basin Drainage District. Getting water out of the Basin as soon as possible is imperative to save the wildlife and their habitats.
12. I am also a farmer and I have witnessed the terrible destruction on the lives of those who farm in the Basin due to the retention of water in it for much longer than should be necessary. The installation of pumps will greatly reduce the amount of time water stands in this vital agricultural district and will significantly reduce the suffering of those living and working there.
13. On May 12, 2009, Mr. Medlin, a large land owner who has purposely set aside habitat areas on his farms, and I, together with other area farmers and members of the NRCS staff, met with U.S. Secretary of Agriculture Tom Vilsack in the NRCS office in New Madrid. We discussed with Secretary Vilsack the recurring problem of habitat destruction and damage to the agriculture complex in St. John's Bayou Basin Drainage District. Secretary Vilsack could not personally tour the area because of road closures and flooding but, after reviewing satellite pictures of the area provided by the Corps of Engineers, he quickly affirmed the need of a pumping station in the Bayou Basin and offered his support.
14. Further, Declarant sayeth not.

  
William J. Cavins

  
Date

DECLARATION OF RICHARD PHILLIPS, JR.

---

State of Missouri

County of New Madrid

Declarant, Richard Phillips, Jr., declares under penalty of perjury, on personal knowledge as follows:

1. I am 86 years of age and am competent to declare to the facts contained in this Declaration.
2. I live at 401 Kings Highway, New Madrid, Missouri. I have lived all of my life here except when I was at school and in the Navy (Pearl Harbor from 1944 to 1946). My father was in the oil business furnishing farmers with fuel, lubricants and the like and he had a grocery store operation. I was the Mayor of New Madrid for 10 years. I was on the board of the town of New Madrid when the industrial park was built and when the town assembled the bond financing to enable Noranda Primary Aluminum Smelter and Associated Electric's Power Plant to locate in the town. I and my extended family are substantial owners of farm land in Bayou Basin. I own over 160 acres.
3. I am keenly aware of the impact of the flooding on the commercial, industrial and agricultural base in New Madrid and the St. John's Bayou Basin.
4. Plainly, when the river is up, the gates at New Madrid at the south end of the Bayou Basin are closed. Many times the gates are closed when there is substantial rain fall in the Basin causing acres and acres to flood. Because there is no natural way for the water to escape, it stands in place, creating a huge lake that saturates the ground. When the water finally recedes, Bayou Basin is the last to get relief.
5. During excessive rainfall water threatens the town of New Madrid and Farmers have to pump water away from the town over the levee. This necessary action causes additional flooding build up in the Bayou Basin causing a much longer delay before the water can recede. It is a recurring problem and pumps have been needed for years. There have been times that if the farming community had not pumped water over the levee, the town would have been subject to homes being flooded.
6. Although I am retired now, I was in the fertilizer and chemical business for about 25 years and was the only person in the business for many years. I sold fertilizer to many farmers in the Bayou Basin. Flooding in the Basin was a constant economic threat to my business and to farmers because it would cause farmers to delay purchasing my products or in some cases not to purchase at all. Many times the flood waters would wash away fertilizer that had been spread over the farm land.
7. I estimate that over the time I operated my business the economic losses were approximately \$250,000. I sold the business in 1998, but I kept the office and I see farmers every day.
8. My family and I were big rice growers. The backwater flooding causes it to be too late to plant rice and rice is a good cash crop.
9. If pumps were installed at the gravity gates, it would significantly alleviate the damage. If water were released from pumps instead of being pumped into the area, the water's rapid out-flow would reduce

saturation and cause much quicker drying of the land. For years, we have been in dire need of the pumps to go straight into the river. When they close the gates, the water backs up in a hurry when it rains.

10. I know that the pooling in the Basin during times of high rainfall causes problems for the wildlife in the area. When the water gets up and remains high, the wildlife take to the high ground to save their lives. The flooding destroys their natural habitat and nesting grounds in the spring time and the levees where the wildlife retreat provide little shelter or forage.
11. Further, declarant sayeth not. This Declaration is made by me under penalty of perjury.

Richard Phillips, Jr.  
Richard Phillips, Jr.

Dated: 06-27-2012

## DECLARATION OF ROBERT HENRY

---

State of Missouri

County of New Madrid

Declarant, Robert Henry, declares under penalty of perjury, on personal knowledge as follows:

1. I am 67 years of age and am competent to make this declaration.
2. I was born east of New Madrid, Missouri and I live in the City of New Madrid. I am a life-long resident and went to school here. My office is located in New Madrid.
3. I am one of the largest independent seed dealers in the United States. Annually my sales approach 6,000 tons of bean, corn, and wheat seed in the United States. As a seed dealer, I sell certified seed to over 600 farmers from Berryville, Missouri to below Memphis, Tennessee and as far west as West Point, Iowa. My seed sales approach 15 million annually.
4. Close to 40% of my total seed sales are made to over 100 farmers in the St. John's Bayou Basin Drainage District.
5. I have been a farmer all my life. My father farmed and cut timber. I currently have a small farm in the Bayou Basin.
6. Ever since I have been old enough to remember flooding has been bad in the Basin. The flooding caused substantial damages to row crop production in our farming operation.
7. I recall one year the damage was so bad because we could not get the crops in the ground, my father had to sell every hog he owned to pay off his loan. He sold 600 hogs. He kept 40 shoats to rebuild his stock.
8. In 2011, in the Basin, many people had corn, wheat and beans planted before the rains and the bad flooding came. The wheat was all but made and not too far from being harvested. The loss of those crops was devastating to the farmers. Because the land was not able to dry out, it was too late to replant the wheat and corn crops. Farmers had to plant beans. I observed crop losses all the way north from New Madrid to Commerce in Benton Hills.
9. The roads were cut off by the water and people were pumping water to keep it out of their homes.
10. If there were pumps in the basin to get the water out quicker, it would help significantly. Pumping would prevent the water build up and wide-spread saturation of the area.
11. We had a tractor pumping for several days to keep the water from flooding into the town of New Madrid. Other farmers were assisting in the effort to divert the gathering rain water away from the town. If there had been one more rain during this time, we could not have held it back.
12. My office is in the town of New Madrid and our staff had packed all of our files in a dry box ready to leave if we had to go.



13. The flooding of 2011 almost shut down Interstate 55 and the Town of Sikeston. If the water had closed the interstate, then the lifeline to the whole central portion of the nation would have been affected. I also have an office at East Prairie and, during the high water, I was unable to get there except by routing through Sikeston and Charleston. This route added significant extra distances to my office.
14. The flooding is devastating to wildlife. Within the Basin, the deer, turkey, rabbits, and quail have no place to go when the floods destroy their habitat. Many farmers have gone to significant expense to create wildlife habitat reservation areas and the destruction of habitat causes substantial hardship on the animals and also the human population in the attempt to preserve it.
15. The placement of the flood water removal pumps that were planned for the south end of the Bayou Basin is necessary to prevent the backup of drainage water and the consequent flooding caused by the blockage.
16. Further, declarant sayeth not. This Declaration is made by me under penalty of perjury.

  
Robert Henry

Dated 6-25-2012

## DECLARATION OF BRYAN PALMER

State of Missouri County

of SCOTT

Declarant, Bryan Palmer, declares the following statements of fact to be true to the best of his knowledge, information and belief, under the penalty of perjury.

1. I am over 21 years of age, have personal knowledge of the facts state herein and am competent to give this Declaration.
2. I live in Sikeston, Missouri, and have been a resident in the St. John's Bayou Basin Drainage District area all of my life.
3. My father and I were partners with other investors in a 1,000 acre Dairy Farming business located one mile east of I-55, along Mo. Highway SO, and all within the St. John's Bayou Basin Drainage District. ("St. John's").
4. Together with international investors, we developed the concept for our Dairy Farm of having free ranging dairy cattle with specially prepared and grown pastureland in order to produce high quality milk for consumers. The economic power of the plan was driven on the concept that the cattle would free graze and would not require an expensive special feeding regimen.
5. The preparation of the pastureland, acquisition of dairy cattle, and construction of dairy farming facilities and infrastructure involved millions of dollars of initial capitalization.
6. In 200S, the record flooding within St. John's devastated the project. Over SO of the farmland was underwater. The water backed up into the ditches (Ash Slough and St. John's Ditch), overflowing the banks and supersaturating the pasturelands. At one time the fence posts on our land were totally under water.
7. The operation had a little island of higher ground and our 1100 head of dairy cattle all herded into that spot. We had to find ways to transport the cattle off the Ranch to another Ranch that had not been flooded out.
8. The flooding ruined the pastureland for the free ranging cattle. We were forced into purchasing expensive prepared cattle feed. The cost was so exorbitant that we ended up loosing the entire business.
9. In the process the partners put in an additional 2 to 3 million in capital to try to save the business. We tried to reseed the pastureland, but could not get it back to its prior state of providing an ample home grown food supply for the cattle.
10. We ended up selling most of the cattle because the loss of the pastureland destroyed the business. Ultimately the Dairy Farm was sold at auction.
11. My father personally lost over a half-million dollars in this innovative investment.

12. The flooding destroyed the business. Had there been pumps in the lower end of St. John's to remove the water that backed up in the ditches, the flooding would not have ruined our pastureland and the plan to provide healthy milk from free range cattle would not have failed.
- 3.
13. In my opinion the loss of this farm had a huge negative economic impact for the local and statewide business, industrial and agricultural community and the flooding caused the end of an innovative idea to provide healthier milk products for the county. In addition to our own loss, the 480 acre Medlin farm, just a mile north of our dairy operation, and a highly-improved, graded and irrigated rice farm, was also completely under water and unable to plant rice in the 2008 and 2011 crop years.

14. Further, Declarant sayeth not.



Bryan Palmer

Dated: 06/25/2012


DECLARATION OF KAREN JONES

State of Missouri

County of SCOTT

Karen Jones, declares on personal knowledge, that the facts set forth in this Declaration are true to the best of her knowledge, information and belief, under the penalty of perjury.

1. I am over 21 years of age and am competent to declare of the truth the facts set out herein.
2. My home is in the Mini Farms Subdivision outside of Sikeston, Missouri. The Subdivision contains approximately 200 hundred homes and each home is on an acre sized lot in the St. John's Bayou Basin Drainage District ("St. John's"). The St. John's Ditch runs to the east side of the subdivision.
3. I have lived through four floods that have impacted my home and the homes of my neighbors. Every year the floods come, the high water gets worse.
4. In May 2011, the entire subdivision was under water. My neighbor's home 3 doors down from me had two feet of water standing in her home. She had to tear her house down and rebuild.
5. My neighbor two houses down from me, Mrs. Alcorn, is 90 years old. The flooding buckled her floor and she had to move out while the work was being done to replace the bad flooring.
6. Flooding routinely comes into my yard when the St. John's Ditch backs up. In 2011 there was two feet of standing water under my house. The water pressure cracked and buckled my garage pad.
7. My neighbor to the north had to have the toilets removed from the house because the septic tank filled with water and raw sewage backed up into the house. Throughout the subdivision, the septic tanks quit functioning.
8. The subdivision has four north-south roads and 2 east-west roads servicing the neighborhood. This past year three north-south roads and the northern most east-west road were impassible due to the flooding. The roads were out for one and a half to two weeks. People either had to move out or live with relatives. Grocery shopping was all but impossible.
9. The problem is caused because water is not allowed to drain out of St. John's at the south end. The drainage ditches fill and back up to the north. If pumps were installed in the south end of St. John's the relief would enable us to stay in our homes and would prevent the devastating flooding back-up into our subdivision.
10. Our homeowners association has written many letters over the years begging for the pumps to be installed.
11. Further, declarant sayeth not.



Karen Jones Date: 06/26/2012

13. The flooding of 2011 almost shut down Interstate 55 and the Town of Sikeston. If the water had closed the interstate, then the lifeline to the whole central portion of the nation would have been affected. I also have an office at East Prairie and, during the high water, I was unable to get there except by routing through Sikeston and Charleston. This route added significant extra distances to my office.
14. The flooding is devastating to wildlife. Within the Basin, the deer, turkey, rabbits, and quail have no place to go when the floods destroy their habitat. Many farmers have gone to significant expense to create wildlife habitat reservation areas and the destruction of habitat causes substantial hardship on the animals and also the human population in the attempt to preserve it.
15. The placement of the flood water removal pumps that were planned for the south end of the Bayou Basin is necessary to prevent the backup of drainage water and the consequent flooding caused by the blockage.
16. Further, declarant sayeth not. This Declaration is made by me under penalty of perjury.

  
Robert Henry

Dated: 6-25-2012



Declaration of John Byrd

---

State of Missouri

County of Scott

John Byrd declares on personal knowledge under penalty of perjury that the facts set out in this Declaration are true and correct to the best of my knowledge, information and belief.

1. I am over 21 years of age and am competent to declare the truth of the facts set out herein
2. I live just northeast of Sikeston, Missouri and farm 3 miles north of Highway 60. I grow row on farms throughout the area primarily north of Highway 60 and North of Highway 62. My farms approximately 3,600 acres in St. John's Bayou Basin Drainage District. ("St. John's").
3. Our family moved into the area from Alabama in 1925 to the same farm I live on now.
4. We now plant corn and soy beans mainly. We had to quit growing cotton because of wetne from saturated flooded fields. We don't grow wheat anymore because the flooding makes I doubtful whether it can make a wheat crop.
5. There has been flooding in St. John's for as long as I can remember. I think the flooding is getting worse, primarily because the ditches in St. John's fill up when we have heavy rains. is caused by a number of factors. The river is staying up longer and the gates at New Madrid closed longer leaving no escape for the waters from heavy rains in St. John's. Also, there is r asphalt with more homes, driveways, parking areas and streets causing more water to run o faster into the ditches and sloughs in St. John's.
6. Basically, we get the flooding from the bottom of St. John's with the rains. The St. John's dit get full and the water backs up from New Madrid to Sikeston.
7. There has been flooding during heavy rains as long as I can remember, but it is getting worse have seen water between my house and highway 62 over 22 inches deep in the middle of th road. In 2011, the water was standing 12 inches deep in the road.
8. I could not get my crops in in 2011 on time. We were 45 to 60 days late getting the crop plan
9. Often, if we get a crop in the ground, flooding will take it out and we have to replant. When river is up, it pushes the water table up and there is no place for the water to go.
10. 2012 is the first year in a long time that we have not had to replant our corn crop.
11. I also own a business on Highway 61, south of Sikeston called Irrigation Central. I bought this business over 10 years ago. I help farmers build wells, install pivots and put in pumps.

12. The flooding causes farmers to suffer significant damage because of needed repairs to pivo control boxes and motors. I have replaced a lot of electrical equipment, motor starts and r that were damaged because of the floods. These costs to farmers have easily exceeded a r million dollars.
13. The proper solution to alleviate this economic disaster to the region is the installation of th pumps at the south end of St. John's. The water must be removed and the ditches must be drained as quickly as possible in the flood years. We need the pumps badly.
14. Further, Declarant sayeth not.

  
John Byrd

Date: June 27, 2012

DECLARATION OF THEODORE W. MEDLIN

---

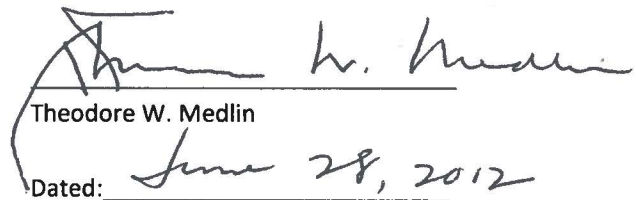
STATE OF TENNESSEE

COUNTY OF SHELBY

Declarant, Theodore W. Medlin, declares under penalty of perjury that the facts set out in this Declaration are true and correct to the best of his knowledge, information and belief.

1. I am over 21 years of age, have personal knowledge of the facts stated herein and am competent to give this Declaration.
2. I reside at 720 Scott Street, New Madrid, MO. 63869. I also have a residence in Memphis, Tennessee. My family owns 3,903.74 acres of land in St. John's Bayou Basin Drainage District as calculated by the NRCS, New Madrid, MO. 3,303.78 acres are leased by my family to farmers for farming operations. 599.96 acres have been voluntarily and purposely set aside for wildlife habitat as the land was being developed for agricultural purposes. This set aside is voluntary and was dedicated by my family before the creation of any local, state or federal governmental programs for the preservation of wildlife habitat.
3. As fifth generation land-owners and farmers in the Bayou Basin, it has always been my family's intention to be good stewards of the land. In addition to our farming operations, we are committed to ensuring the preservation of a significant portion of the land for the protection and conservation of the native fauna and flora. Fully 15% of our land in the Bayou Basin is exclusively dedicated to that purpose. In addition, the remaining acreage is operated so as to be conducive to wildlife preservation. In addition to the set aside acreage, our family participates in the NRCS-CSP program creating significant additional acreage planted specifically for wildlife habitat.
4. I have attached to this Declaration an aerial photograph of Medlin Family wooded areas that comprise the 600 acres of the set aside. The protected land is shown as the white plots on the map. This photographic map was prepared by NRCS.
5. During the times of high flooding backwaters as the ST. John's Ditch rises, the deer population is forced out of natural habitat to escape the rising waters in a northward migration. It is quite common during backwater flooding to see herds of deer forced out of their habitat onto the levees where there is no natural food source. Seeing 200 to 300 deer stranded by the rising water is not unusual. These conditions diminish the food supply for the animal population. I have observed trapped and drowned deer floating in the flood waters.
6. The high waters also force native turkeys, foxes, rabbits and raccoons out of the protected habitat. The displacement of these species destroys their natural nesting grounds and the rising waters in the spring time cause the young of these species to be drowned.
7. I have had first-hand experience of the devastating flooding going back to 1957. It is impossible to understand any justification for allowing these conditions to exist for over sixty years.

8. The depletion of human capital due to flooding is as dramatic as the impact on wildlife. Young farmers trying to develop their chosen profession are often forced out of farming because of the destructive power of the flooding in the St. John's Bayou Basis Drainage District. The flooding in the Basin is one of the critical factors leading to the depopulation of this rural area. Young people and more experienced farmers cannot stand the economic impact year after year.
9. The failure of the farming operations also has a drastic negative impact on small businesses and business owners trying to support farmers in the Basin. This is the result of the repeated and unnatural back-water flooding that disrupts normal farming operations.
10. As a landlord devoted to protecting the families that lease farming operations from us and to protecting wildlife in its natural habitat, I am committed to rectifying the conditions that cause the devastating floods. Without a consistent method to remove the flooding backwaters, then the Bayou Basin area cannot be protected nor can it realize its greatest environmental potential.
11. It is essential that the pumping station be installed at the south end of the Basin to get the impounded rainwater out, to enable the land to dry out in time for proper planting and to return the wildlife habitat as soon as possible to its natural state to protect our animals.
12. The landowners in the St. John's Bayou Basin Drainage District have seen fit to elect me to be president of their board of supervisors. We are committed to taking all steps to have the pumps installed for the protection of our land, our families, our children and their children, the extended communities in the St. John's Bayou Basin watershed to the north and the wildlife and natural flora we hold so dear.
13. Further declarant sayeth not.

  
Theodore W. Medlin  
Dated: June 28, 2012



# Medlin Controlled Woods Area's



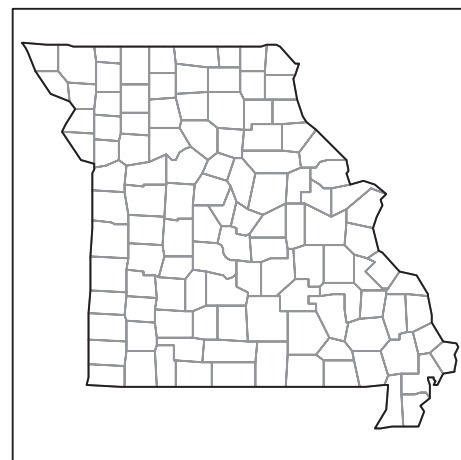
1 inch equals 8,000 feet



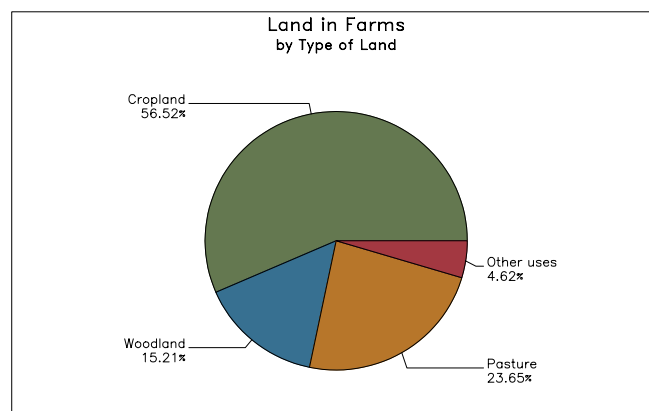
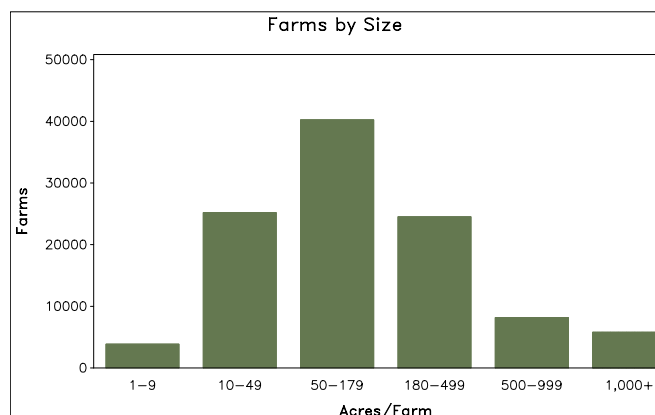
# 2007 CENSUS OF AGRICULTURE

## State Profile

### Missouri



|  | 2007             | 2002             | % change |
|--|------------------|------------------|----------|
| <b>Number of Farms</b>                       | 107,825          | 106,797          | + 1      |
| <b>Land in Farms</b>                         | 29,026,573 acres | 29,946,035 acres | - 3      |
| <b>Average Size of Farm</b>                  | 269 acres        | 280 acres        | - 4      |
| <b>Market Value of Products Sold</b>         | \$7,512,926,000  | \$4,983,255,000  | + 51     |
| Crop Sales \$3,494,938,000 (47 percent)      |                  |                  |          |
| Livestock Sales \$4,017,988,000 (53 percent) |                  |                  |          |
| <b>Average Per Farm</b>                      | \$69,677         | \$46,661         | + 49     |
| <b>Government Payments</b>                   | \$319,519,000    | \$264,475,000    | + 21     |
| <b>Average Per Farm Receiving Payments</b>   | \$7,084          | \$6,097          | + 16     |



United States Department of Agriculture  
National Agricultural Statistics Service

[www.agcensus.usda.gov](http://www.agcensus.usda.gov)

# 2007 CENSUS OF AGRICULTURE

## State Profile

### Missouri

#### Ranked items within U.S., 2007

| Item  | Quantity   | U.S. Rank | Universe <sup>1</sup> |
|---|------------|-----------|-----------------------|
| <b>MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD (\$1,000)</b>             |            |           |                       |
| Total value of agricultural products sold                               | 7,512,926  | 12        | 50                    |
| Value of crops including nursery and greenhouse                         | 3,494,938  | 13        | 50                    |
| Value of livestock, poultry, and their products                         | 4,017,988  | 13        | 50                    |
| <b>VALUE OF SALES BY COMMODITY GROUP (\$1,000)</b>                      |            |           |                       |
| Grains, oilseeds, dry beans, and dry peas                               | 2,963,208  | 10        | 50                    |
| Tobacco   | 5,022      | 12        | 17                    |
| Cotton and cottonseed   | 164,714    | 8         | 17                    |
| Vegetables, melons, potatoes and sweet potatoes                         | 61,705     | 29        | 50                    |
| Fruits, tree nuts, and berries  | 4,315      | 41        | 50                    |
| Nursery, greenhouse, floriculture, and sod                              | 121,280    | 28        | 50                    |
| Cut Christmas trees and short rotation woody crops                      | 1,078      | 30        | 49                    |
| Other crops and hay   | 173,618    | 18        | 50                    |
| Poultry and eggs  | 1,265,166  | 9         | 50                    |
| Cattle and calves   | 1,676,632  | 9         | 50                    |
| Milk and other dairy products from cows                                 | 302,684    | 22        | 50                    |
| Hogs and pigs   | 725,738    | 7         | 50                    |
| Sheep, goats, and their products  | 9,580      | 19        | 50                    |
| Horses, ponies, mules, burros, and donkeys                              | 21,369     | 18        | 50                    |
| Aquaculture   | 9,506      | 24        | 50                    |
| Other animals and other animal products                                 | 7,313      | 33        | 50                    |
| <b>TOP CROP ITEMS (acres)</b>   |            |           |                       |
| Soybeans for beans  | 4,672,738  | 5         | 40                    |
| Forage - land used for all hay and haylage, grass silage, and greenchop | 3,895,401  | 2         | 50                    |
| Corn for grain  | 3,256,195  | 9         | 49                    |
| Wheat for grain, all  | 881,227    | 13        | 47                    |
| Cotton, all   | 377,960    | 9         | 17                    |
| <b>TOP LIVESTOCK INVENTORY ITEMS (number)</b>                           |            |           |                       |
| Broilers and other meat-type chickens                                   | 46,654,478 | 10        | 50                    |
| Turkeys   | 8,604,222  | 4         | 50                    |
| Layers  | 7,249,420  | 15        | 50                    |
| Cattle and calves   | 4,292,702  | 6         | 50                    |
| Hogs and pigs   | 3,101,469  | 7         | 50                    |

#### Other State Highlights

| Economic Characteristics                    | Quantity  | Operator Characteristics  | Quantity |
|---|-----------|---|----------|
| Farms by value of sales:                    |           | Principal operators by primary occupation:                        |          |
| Less than \$1,000                           | 30,541    | Farming   | 45,031   |
| \$1,000 to \$2,499                          | 8,938     | Other   | 62,794   |
| \$2,500 to \$4,999                          | 10,172    |   |          |
| \$5,000 to \$9,999                          | 12,872    | Principal operators by sex:                                       |          |
| \$10,000 to \$19,999                        | 12,377    | Male  | 95,071   |
| \$20,000 to \$24,999                        | 3,884     | Female  | 12,754   |
| \$25,000 to \$39,999                        | 7,346     |   |          |
| \$40,000 to \$49,999                        | 3,217     | Average age of principal operator (years)                         | 57.1     |
| \$50,000 to \$99,999                        | 6,634     |   |          |
| \$100,000 to \$249,999                      | 5,688     | All operators by race <sup>2</sup> :                              |          |
| \$250,000 to \$499,999                      | 2,959     | American Indian or Alaska Native                                  | 826      |
| \$500,000 or more                           | 3,197     | Asian   | 413      |
| Total farm production expenses (\$1,000)    | 6,135,205 | Black or African American   | 226      |
| Average per farm (\$)                       | 56,900    | Native Hawaiian or Other Pacific Islander                         | 45       |
|   |           | White   | 158,187  |
| Net cash farm income of operation (\$1,000) | 1,959,854 | More than one race  | 1,463    |
| Average per farm (\$)                       | 18,176    | All operators of Spanish, Hispanic, or Latino Origin <sup>2</sup> | 736      |

See "Census of Agriculture, Volume 1, Geographic Area Series" for complete footnotes, explanations, definitions, and methodology.

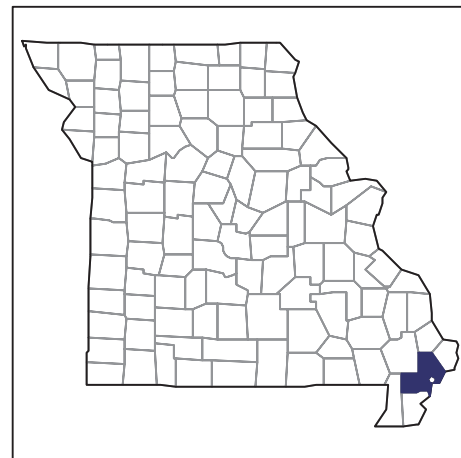
(D) Cannot be disclosed.

<sup>1</sup> Universe is number of states in U.S. with item. <sup>2</sup> Data were collected for a maximum of three operators per farm.

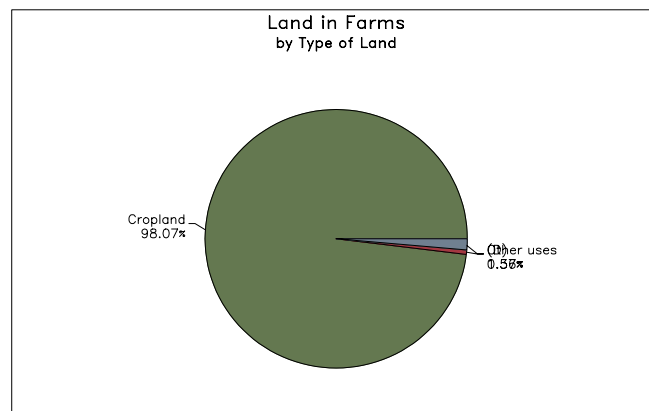
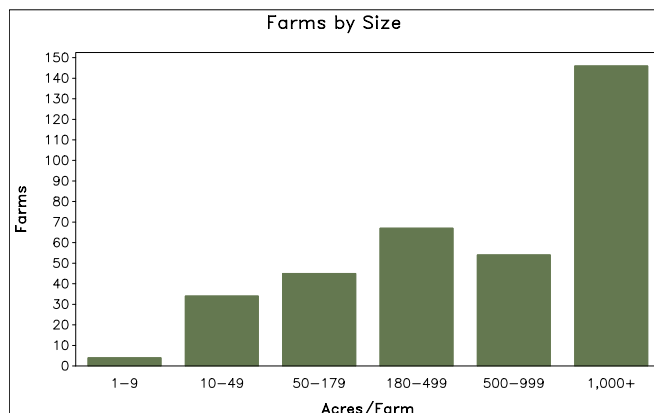
# 2007 CENSUS OF AGRICULTURE

## County Profile

### New Madrid County Missouri



|  | 2007          | 2002          | % change |
|--|---------------|---------------|----------|
| <b>Number of Farms</b>                     | 350           | 364           | - 4      |
| <b>Land in Farms</b>                       | 380,687 acres | 394,946 acres | - 4      |
| <b>Average Size of Farm</b>                | 1,088 acres   | 1,085 acres   | 0        |
| <b>Market Value of Products Sold</b>       | \$141,262,000 | \$98,559,000  | + 43     |
| Crop Sales \$141,223,000 (100 percent)     |               |               |          |
| Livestock Sales \$39,000 (0 percent)       |               |               |          |
| <b>Average Per Farm</b>                    | \$403,606     | \$270,765     | + 49     |
| <b>Government Payments</b>                 | \$13,667,000  | \$7,281,000   | + 88     |
| <b>Average Per Farm Receiving Payments</b> | \$42,845      | \$28,894      | + 48     |



United States Department of Agriculture  
National Agricultural Statistics Service

[www.agcensus.usda.gov](http://www.agcensus.usda.gov)

# 2007 CENSUS OF AGRICULTURE

## County Profile

### New Madrid County – Missouri

Ranked items among the 114 state counties and 3,079 U.S. counties, 2007

| Item  | Quantity | State Rank | Universe <sup>1</sup> | U.S. Rank | Universe <sup>1</sup> |
|---|----------|------------|-----------------------|-----------|-----------------------|
| <b>MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD (\$1,000)</b> |          |            |                       |           |                       |
| Total value of agricultural products sold                   | 141,262  | 7          | 114                   | 585       | 3,076                 |
| Value of crops including nursery and greenhouse             | 141,223  | 2          | 114                   | 189       | 3,072                 |
| Value of livestock, poultry, and their products             | 39       | 114        | 114                   | 3,056     | 3,069                 |
| <b>VALUE OF SALES BY COMMODITY GROUP (\$1,000)</b>          |          |            |                       |           |                       |
| Grains, oilseeds, dry beans, and dry peas                   | 96,497   | 4          | 114                   | 228       | 2,933                 |
| Tobacco   | -        | -          | 11                    | -         | 437                   |
| Cotton and cottonseed                                       | 44,555   | 2          | 8                     | 24        | 626                   |
| Vegetables, melons, potatoes, and sweet potatoes            | (D)      | 54         | 109                   | (D)       | 2,796                 |
| Fruits, tree nuts, and berries                              | -        | -          | 97                    | -         | 2,659                 |
| Nursery, greenhouse, floriculture, and sod                  | (D)      | 97         | 109                   | (D)       | 2,703                 |
| Cut Christmas trees and short rotation woody crops          | -        | -          | 63                    | -         | 1,710                 |
| Other crops and hay   | (D)      | 113        | 114                   | (D)       | 3,054                 |
| Poultry and eggs  | (D)      | 113        | 113                   | (D)       | 3,020                 |
| Cattle and calves   | (D)      | 114        | 114                   | (D)       | 3,054                 |
| Milk and other dairy products from cows                     | -        | -          | 106                   | -         | 2,493                 |
| Hogs and pigs   | -        | -          | 112                   | -         | 2,922                 |
| Sheep, goats, and their products                            | -        | -          | 112                   | -         | 2,998                 |
| Horses, ponies, mules, burros, and donkeys                  | (D)      | 111        | 113                   | (D)       | 3,024                 |
| Aquaculture   | -        | -          | 45                    | -         | 1,498                 |
| Other animals and other animal products                     | (D)      | (D)        | 110                   | (D)       | 2,875                 |
| <b>TOP CROP ITEMS (acres)</b>                               |          |            |                       |           |                       |
| Soybeans for beans  | 144,817  | 3          | 104                   | 43        | 2,039                 |
| Cotton, all   | 93,830   | 2          | 8                     | 22        | 627                   |
| Corn for grain  | 92,506   | 8          | 107                   | 315       | 2,634                 |
| Wheat for grain, all  | 23,982   | 10         | 108                   | 452       | 2,481                 |
| Rice  | 19,320   | 5          | 10                    | 45        | 135                   |
| <b>TOP LIVESTOCK INVENTORY ITEMS (number)</b>               |          |            |                       |           |                       |
| Cattle and calves   | 286      | 114        | 114                   | 2,992     | 3,060                 |
| Horses and ponies   | 207      | 112        | 114                   | 2,850     | 3,066                 |
| Colonies of bees  | (D)      | (D)        | 109                   | (D)       | 2,640                 |
| Layers  | (D)      | (D)        | 113                   | (D)       | 3,024                 |
| Mules, burros, and donkeys                                  | (D)      | (D)        | 113                   | (D)       | 2,998                 |

### Other County Highlights

| Economic Characteristics                    | Quantity | Operator Characteristics  | Quantity |
|---|----------|---|----------|
| Farms by value of sales:                    |          | Principal operators by primary occupation:                        |          |
| Less than \$1,000                           | 26       | Farming   | 254      |
| \$1,000 to \$2,499                          | 1        | Other   | 96       |
| \$2,500 to \$4,999                          | 8        |   |          |
| \$5,000 to \$9,999                          | 15       | Principal operators by sex:                                       |          |
| \$10,000 to \$19,999                        | 19       | Male  | 330      |
| \$20,000 to \$24,999                        | 8        | Female  | 20       |
| \$25,000 to \$39,999                        | 27       |   |          |
| \$40,000 to \$49,999                        | 6        | Average age of principal operator (years)                         | 54.5     |
| \$50,000 to \$99,999                        | 37       |   |          |
| \$100,000 to \$249,999                      | 35       | All operators by race <sup>2</sup> :                              |          |
| \$250,000 to \$499,999                      | 68       | American Indian or Alaska Native                                  | -        |
| \$500,000 or more                           | 100      | Asian   | -        |
| Total farm production expenses (\$1,000)    | 108,298  | Black or African American   | 9        |
| Average per farm (\$)                       | 309,422  | Native Hawaiian or Other Pacific Islander                         | -        |
|   |          | White   | 495      |
| Net cash farm income of operation (\$1,000) | 49,098   | More than one race  | 6        |
| Average per farm (\$)                       | 140,281  | All operators of Spanish, Hispanic, or Latino Origin <sup>2</sup> | 3        |

See "Census of Agriculture, Volume 1, Geographic Area Series" for complete footnotes, explanations, definitions, and methodology.

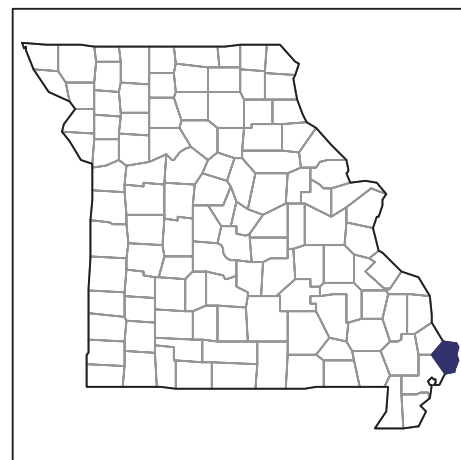
(D) Cannot be disclosed. (Z) Less than half of the unit shown.

<sup>1</sup> Universe is number of counties in state or U.S. with item. <sup>2</sup> Data were collected for a maximum of three operators per farm.

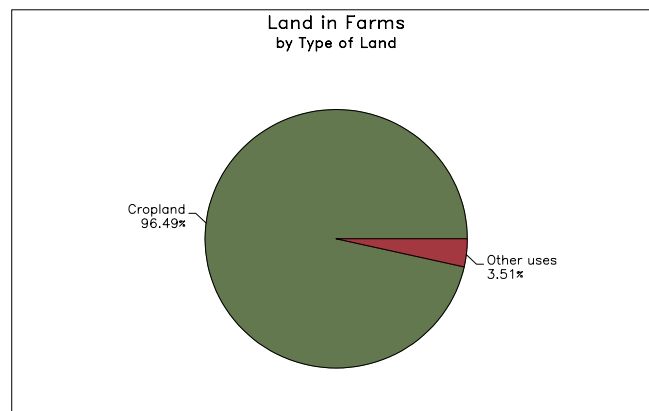
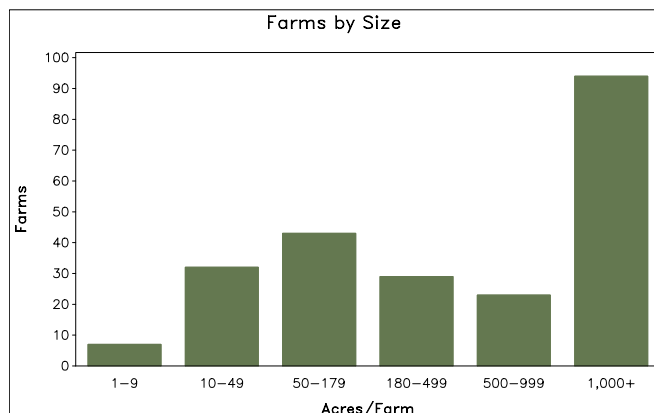
# 2007 CENSUS OF AGRICULTURE

## County Profile

### Mississippi County Missouri



|  | 2007          | 2002          | % change |
|--|---------------|---------------|----------|
| <b>Number of Farms</b>                     | 228           | 247           | - 8      |
| <b>Land in Farms</b>                       | 258,456 acres | 271,713 acres | - 5      |
| <b>Average Size of Farm</b>                | 1,134 acres   | 1,100 acres   | + 3      |
| <b>Market Value of Products Sold</b>       | \$108,420,000 | \$66,009,000  | + 64     |
| Crop Sales \$104,434,000 (96 percent)      |               |               |          |
| Livestock Sales \$3,986,000 (4 percent)    |               |               |          |
| <b>Average Per Farm</b>                    | \$475,525     | \$267,244     | + 78     |
| <b>Government Payments</b>                 | \$4,459,000   | \$2,878,000   | + 55     |
| <b>Average Per Farm Receiving Payments</b> | \$22,294      | \$17,654      | + 26     |



United States Department of Agriculture  
National Agricultural Statistics Service

[www.agcensus.usda.gov](http://www.agcensus.usda.gov)



# 2007 CENSUS OF AGRICULTURE

## County Profile

### Mississippi County – Missouri

Ranked items among the 114 state counties and 3,079 U.S. counties, 2007

| Item  | Quantity | State Rank | Universe <sup>1</sup> | U.S. Rank | Universe <sup>1</sup> |
|---|----------|------------|-----------------------|-----------|-----------------------|
| <b>MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD (\$1,000)</b> |          |            |                       |           |                       |
| Total value of agricultural products sold                   | 108,420  | 18         | 114                   | 817       | 3,076                 |
| Value of crops including nursery and greenhouse             | 104,434  | 5          | 114                   | 345       | 3,072                 |
| Value of livestock, poultry, and their products             | 3,986    | 107        | 114                   | 2,542     | 3,069                 |
| <b>VALUE OF SALES BY COMMODITY GROUP (\$1,000)</b>          |          |            |                       |           |                       |
| Grains, oilseeds, dry beans, and dry peas                   | 92,341   | 5          | 114                   | 260       | 2,933                 |
| Tobacco   | -        | -          | 11                    | -         | 437                   |
| Cotton and cottonseed                                       | (D)      | 7          | 8                     | (D)       | 626                   |
| Vegetables, melons, potatoes, and sweet potatoes            | 11,220   | 2          | 109                   | 171       | 2,796                 |
| Fruits, tree nuts, and berries                              | (D)      | (D)        | 97                    | (D)       | 2,659                 |
| Nursery, greenhouse, floriculture, and sod                  | (D)      | (D)        | 109                   | (D)       | 2,703                 |
| Cut Christmas trees and short rotation woody crops          | -        | -          | 63                    | -         | 1,710                 |
| Other crops and hay   | (D)      | 112        | 114                   | (D)       | 3,054                 |
| Poultry and eggs  | 3,650    | 25         | 113                   | 769       | 3,020                 |
| Cattle and calves   | 331      | 111        | 114                   | 2,868     | 3,054                 |
| Milk and other dairy products from cows                     | -        | -          | 106                   | -         | 2,493                 |
| Hogs and pigs   | -        | -          | 112                   | -         | 2,922                 |
| Sheep, goats, and their products                            | (D)      | 109        | 112                   | 2,820     | 2,998                 |
| Horses, ponies, mules, burros, and donkeys                  | -        | -          | 113                   | -         | 3,024                 |
| Aquaculture   | -        | -          | 45                    | -         | 1,498                 |
| Other animals and other animal products                     | (D)      | 103        | 110                   | (D)       | 2,875                 |
| <b>TOP CROP ITEMS (acres)</b>                               |          |            |                       |           |                       |
| Soybeans for beans  | 143,739  | 4          | 104                   | 45        | 2,039                 |
| Corn for grain  | 83,300   | 9          | 107                   | 366       | 2,634                 |
| Wheat for grain, all  | 49,564   | 2          | 108                   | 292       | 2,481                 |
| Sorghum for grain   | 6,237    | 4          | 89                    | 225       | 1,158                 |
| Vegetables harvested for sale                               | 4,874    | 2          | 109                   | 174       | 2,794                 |
| <b>TOP LIVESTOCK INVENTORY ITEMS (number)</b>               |          |            |                       |           |                       |
| Broilers and other meat-type chickens                       | (D)      | 13         | 105                   | (D)       | 2,476                 |
| Pullets for laying flock replacement                        | (D)      | 11         | 110                   | (D)       | 2,627                 |
| Cattle and calves   | 1,334    | 111        | 114                   | 2,863     | 3,060                 |
| Horses and ponies   | 100      | 113        | 114                   | 2,974     | 3,066                 |
| Colonies of bees  | (D)      | (D)        | 109                   | (D)       | 2,640                 |

### Other County Highlights

| Economic Characteristics                    | Quantity | Operator Characteristics  | Quantity |
|---|----------|---|----------|
| Farms by value of sales:                    |          | Principal operators by primary occupation:                        |          |
| Less than \$1,000                           | 32       | Farming   | 168      |
| \$1,000 to \$2,499                          | 3        | Other   | 60       |
| \$2,500 to \$4,999                          | 10       |   |          |
| \$5,000 to \$9,999                          | 7        | Principal operators by sex:                                       |          |
| \$10,000 to \$19,999                        | 9        | Male  | 216      |
| \$20,000 to \$24,999                        | 3        | Female  | 12       |
| \$25,000 to \$39,999                        | 15       |   |          |
| \$40,000 to \$49,999                        | 3        | Average age of principal operator (years)                         | 57.0     |
| \$50,000 to \$99,999                        | 17       |   |          |
| \$100,000 to \$249,999                      | 20       | All operators by race <sup>2</sup> :                              |          |
| \$250,000 to \$499,999                      | 36       | American Indian or Alaska Native                                  | 1        |
| \$500,000 or more                           | 73       | Asian   | -        |
| Total farm production expenses (\$1,000)    | 77,512   | Black or African American   | 10       |
| Average per farm (\$)                       | 339,965  | Native Hawaiian or Other Pacific Islander                         | -        |
|   |          | White   | 325      |
| Net cash farm income of operation (\$1,000) | 38,935   | More than one race  | 2        |
| Average per farm (\$)                       | 170,768  | All operators of Spanish, Hispanic, or Latino Origin <sup>2</sup> | 6        |

See "Census of Agriculture, Volume 1, Geographic Area Series" for complete footnotes, explanations, definitions, and methodology.

(D) Cannot be disclosed. (Z) Less than half of the unit shown.

<sup>1</sup> Universe is number of counties in state or U.S. with item. <sup>2</sup> Data were collected for a maximum of three operators per farm.

# **Volume 2**

## **Part 3**

### **Response to Draft EIS Comments**



**U.S. Army Corps of Engineers**  
**Memphis District**



DEPARTMENT OF THE ARMY  
MEMPHIS DISTRICT CORPS OF ENGINEERS  
167 NORTH MAIN STREET B-202  
MEMPHIS, TN 38103-1894

Reply to  
Attention of

Executive Office

3 JAN 13

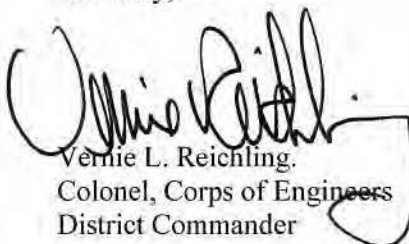
Mr. Ken Kopocis  
Assistant Administrator for the Office of Water  
Environmental Protection Agency  
Ariel Rios Building  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

Re: St. Johns Bayou and New Madrid Floodway, Missouri Project

Dear Mr. Kopocis:

Enclosed is a compact disc containing an advanced copy of the *St. Johns Bayou and New Madrid Floodway Project Draft Environmental Impact Statement* and supporting appendices. The draft EIS has not been released to the public. We anticipate that the 45-day public review will begin on January 18, 2013 with publication of the Notice of Availability in the Federal Register. We look forward to receiving your agency's official comments on the project. We will continue to coordinate with members of your staff as the NEPA process progresses. Please contact Danny Ward for any questions at (901) 544-0709 or [daniel.d.ward@usace.army.mil](mailto:daniel.d.ward@usace.army.mil).

Sincerely,

  
Vernie L. Reichling  
Colonel, Corps of Engineers  
District Commander

(Enclosure)

Copies Furnished:

Mr. Dan Ashe, U.S. Fish and Wildlife Service  
Mr. Charles Wooley, U.S. Fish and Wildlife Service, Midwest Region  
Ms. Amy Salveter, U.S. Fish and Wildlife Service, Columbia, Missouri Ecological Services Field Office  
Ms. Karen Flournoy, EPA Region VII, Water, Wetlands, and Pesticide Division  
Dr. Ron Hammerschmidt, EPA Region VII, Environmental Services Division



Reply to  
Attention of

Executive Office

**DEPARTMENT OF THE ARMY**  
**MEMPHIS DISTRICT CORPS OF ENGINEERS**  
167 NORTH MAIN STREET B-202  
MEMPHIS, TN 38103-1894

3 JAN 13

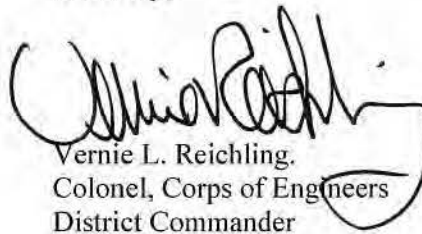
Dr. Ron Hammerschmidt  
Director, Environmental Services Division  
U.S. Environmental Protection Agency Region VII  
11201 Renner Blvd.  
Lenexa, KS 66219

Re: St. Johns Bayou and New Madrid Floodway, Missouri Project

Dear Dr. Hammerschmidt:

Enclosed is a compact disc containing an advanced copy of the *St. Johns Bayou and New Madrid Floodway Project Draft Environmental Impact Statement* and supporting appendices. The draft EIS has not been released to the public. We anticipate that the 45-day public review will begin on January 18, 2013 with publication of the Notice of Availability in the Federal Register. We look forward to receiving your agency's official comments on the project. We will continue to coordinate with members of your staff as the NEPA process progresses. Please contact Danny Ward for any questions at (901) 544-0709 or [daniel.d.ward@usace.army.mil](mailto:daniel.d.ward@usace.army.mil).

Sincerely,

  
Vernie L. Reichling  
Colonel, Corps of Engineers  
District Commander

(Enclosure)

Copies Furnished:

Mr. Dan Ashe, U.S. Fish and Wildlife Service  
Mr. Charles Wooley, U.S. Fish and Wildlife Service, Midwest Region  
Ms. Amy Salveter, U.S. Fish and Wildlife Service, Columbia, Missouri Ecological Services Field Office  
Mr. Ken Kopocis, EPA Headquarters, Office of Water  
Ms. Karen Flournoy, EPA Region VII, Water, Wetlands, and Pesticide Division





Reply to  
Attention of

Executive Office

**DEPARTMENT OF THE ARMY**  
MEMPHIS DISTRICT CORPS OF ENGINEERS  
167 NORTH MAIN STREET B-202  
MEMPHIS, TN 38103-1894

3 JAN 13

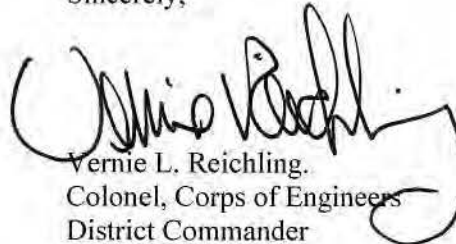
Ms. Karen Flournoy  
Director, Water, Wetlands and Pesticide Division  
U.S. Environmental Protection Agency Region VII  
11201 Renner Blvd.  
Lenexa, KS 66219

Re: St. Johns Bayou and New Madrid Floodway, Missouri Project

Dear Ms. Flournoy:

Enclosed is a compact disc containing an advanced copy of the *St. Johns Bayou and New Madrid Floodway Project Draft Environmental Impact Statement* and supporting appendices. The draft EIS has not been released to the public. We anticipate that the 45-day public review will begin on January 18, 2013 with publication of the Notice of Availability in the Federal Register. We look forward to receiving your agency's official comments on the project. We will continue to coordinate with members of your staff as the NEPA process progresses. Please contact Danny Ward for any questions at (901) 544-0709 or [daniel.d.ward@usace.army.mil](mailto:daniel.d.ward@usace.army.mil).

Sincerely,

  
Vernie L. Reichling.  
Colonel, Corps of Engineers  
District Commander

(Enclosure)

Copies Furnished:

Mr. Dan Ashe, U.S. Fish and Wildlife Service  
Mr. Charles Wooley, U.S. Fish and Wildlife Service, Midwest Region  
Ms. Amy Salveter, U.S. Fish and Wildlife Service, Columbia, Missouri Ecological Services Field Office  
Mr. Ken Kopocis, EPA Headquarters, Office of Water  
Dr. Ron Hammerschmidt, EPA Region VII, Environmental Services Division





Reply to  
Attention of

Executive Office

**DEPARTMENT OF THE ARMY**  
**MEMPHIS DISTRICT CORPS OF ENGINEERS**  
167 NORTH MAIN STREET B-202  
MEMPHIS, TN 38103-1894

3 JAN 13

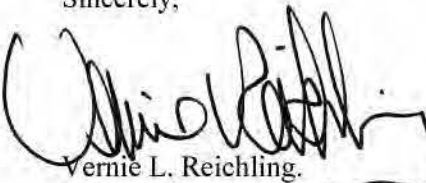
Mr. Dan Ashe  
Director, U.S. Fish and Wildlife Service  
Main Interior  
1849 C Street NW, Room 331  
Washington, DC 20240-0001

Re: St. Johns Bayou and New Madrid Floodway, Missouri Project

Dear Mr. Ashe:

Enclosed is a compact disc containing an advanced copy of the *St. Johns Bayou and New Madrid Floodway Project Draft Environmental Impact Statement* and supporting appendices. The draft EIS has not been released to the public. We anticipate that the 45-day public review will begin on January 18, 2013 with publication of the Notice of Availability in the Federal Register. We look forward to receiving your agency's official comments on the project. We will continue to coordinate with members of your staff as the NEPA process progresses. Please contact Danny Ward for any questions at (901) 544-0709 or [daniel.d.ward@usace.army.mil](mailto:daniel.d.ward@usace.army.mil).

Sincerely,

  
Vernie L. Reichling  
Colonel, Corps of Engineers  
District Commander

(Enclosure)

Copies Furnished:

Mr. Charles Wooley, U.S. Fish and Wildlife Service, Midwest Region  
Ms. Amy Salveter, U.S. Fish and Wildlife Service, Columbia, Missouri Ecological Services Field Office  
Mr. Ken Kopocis, EPA Headquarters, Office of Water  
Ms. Karen Flournoy, EPA Region VII, Water, Wetlands, and Pesticide Division  
Dr. Ron Hammerschmidt, EPA Region VII, Environmental Services Division



DEPARTMENT OF THE ARMY  
MEMPHIS DISTRICT CORPS OF ENGINEERS  
167 NORTH MAIN STREET B-202  
MEMPHIS, TN 38103-1894

Reply to  
Attention of

Executive Office

3 JAN 13

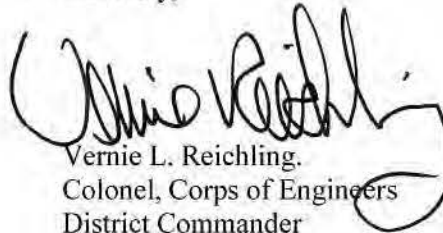
Mr. Charles Wooley  
Regional Director  
U.S. Fish and Wildlife Service, Midwest Region  
5600 American Blvd. West  
Bloomington, MN 55437-1458

Re: St. Johns Bayou and New Madrid Floodway, Missouri Project

Dear Mr. Wooley:

Enclosed is a compact disc containing an advanced copy of the *St. Johns Bayou and New Madrid Floodway Project Draft Environmental Impact Statement* and supporting appendices. The draft EIS has not been released to the public. We anticipate that the 45-day public review will begin on January 18, 2013 with publication of the Notice of Availability in the Federal Register. We look forward to receiving your agency's official comments on the project. We will continue to coordinate with members of your staff as the NEPA process progresses. Please contact Danny Ward for any questions at (901) 544-0709 or [daniel.d.ward@usace.army.mil](mailto:daniel.d.ward@usace.army.mil).

Sincerely,



Vernie L. Reichling  
Colonel, Corps of Engineers  
District Commander

(Enclosure)

Copies Furnished:

Mr. Dan Ashe, U.S. Fish and Wildlife Service  
Ms. Amy Salveter, U.S. Fish and Wildlife Service, Columbia, Missouri Ecological Services Field Office  
Mr. Ken Kopocis, EPA Headquarters, Office of Water  
Ms. Karen Flournoy, EPA Region VII, Water, Wetlands, and Pesticide Division  
Dr. Ron Hammerschmidt, EPA Region VII, Environmental Services Division





## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Columbia Ecological Services Field Office  
101 Park DeVille Drive, Suite A  
Columbia, Missouri 65203-0057  
Phone: (573) 234-2132 Fax: (573) 234-2181



January 18, 2013

Colonel Vernie L. Reichling, Jr.  
Commander, Memphis District  
U.S. Army Corps of Engineers  
167 North Main Street B-202  
Memphis, Tennessee 38103-1894

Dear Colonel Reichling:

Thank you for the January 2013 IAT advance copy of the Draft Environmental Impact Statement (DEIS) for the St. Johns Bayou and New Madrid Floodway Project in southeast Missouri. Because of workload, the U.S. Fish and Wildlife Service (Service) has been able to conduct only a cursory review of the main body of the DEIS; however, we believe it is important to provide these preliminary comments in the interest of addressing our outstanding resources concerns as efficiently as possible. The Service will continue our more detailed review and will forward those comments within the next month.

In our preliminary review of the document, we have identified the following concerns that have not been adequately addressed:

- The document appears to discredit previous and continuing Service input regarding the value of fish and wildlife resources within the project area. This includes mischaracterizing Service input regarding recent updates to the National Wetlands Inventory, a long-standing, nationally recognized mapping tool for wetlands data.
- The proposed mitigation actions lack scientific validation, are logistically infeasible, and inadequate both in kind (i.e., batture lands for lost floodplain and backwaters) and amount. Based on the descriptions provided in the DEIS, the proposed mitigation does not appear to comply with the current Mitigation Rule under the Clean Water Act.
- The Adaptive Management program does not include details on what actions will be taken to rectify mitigation measures that do not work. This would include additional lands and changes in the project operations and the effects to the resource as well as the cost and benefit of the project.
- The DEIS does not address cumulative impacts of lost flood water storage capacity of the floodway on the surrounding river communities under the preferred alternative, nor does it characterize the impacts of the 2011 flood on both the Floodway and adjacent river reaches. The Independent Expert Panel Review Panel urged the Corps to use actual

economic and flood data in evaluating project effects, and not rely solely on model results.

The principal difference between the Service and the U.S. Army Corps of Engineers (Corps) on the project is encapsulated in second paragraph of the DEIS Abstract (page i). In this paragraph the Corps states that the connection between the Mississippi River and its floodplain (referred to by the Corps as the “flood pulse”) is no longer the driving force for the existence, productivity, and interactions of biota in the project area. The Corps contends that agricultural disturbances are now the principle force that limits ecological productivity and habitat. The Service agrees with two aspects of the Corps’ position stated here: 1) that the river-floodplain connection has been permanently eliminated for the St. Johns Bayou Basin; and 2) that agricultural land use has reduced both the quantity and quality of physical habitat. However, the Service strongly disagrees with the Corps pertaining to the ecological and biological importance of the hydrologic connection of the New Madrid Floodway with the river. There is a huge volume of scientific literature on the river-floodplain continuum and the resource effects when the connection is eliminated. This issue has been extensively studied along the Lower Mississippi River, an area which has experienced significant impacts to the river-floodplain ecosystem by levees, control structures, drainage, and land use changes.

The 1,500 foot gap in the frontline levee of the New Madrid Floodway constitutes the only remaining place in the State of Missouri where the river is connected to its floodplain. Furthermore, there are few similar areas left throughout the Lower Mississippi River. The Service fully acknowledges that alterations in the form of levees, drainage, and agriculture have affected the quantity and quality of habitat in the Floodway. However, based on sound scientific information, it is clearly evident to the Service and others that the hydrologic connection between the river and the Floodway is the principal biological driver. This occasional hydrologic connection is responsible for maintaining a full spectrum of natural resources typically associated with a river-floodplain landscape (e.g., wetlands, fish, waterfowl, shorebirds). During the Independent Expert Panel Review process for the project, the experts discussed in detail the value of this connection as a biological driver in the Floodway. Its value was further validated in a recent study of the Floodway after breach of the Birds Point Levee in May 2011 (Phelps, Tripp, and Herzog 2012. *Temporary Connectivity: A Comparison of the New Madrid Floodway and the Adjacent Main River, Big Rivers and Wetland Field Station, Missouri Department of Conservation*). This study documented higher levels of fish diversity, density, and growth in the Floodway than in the Mississippi River.

Based on our abbreviated review, the Service believes the Corps’ preferred alternative continues to result in unacceptable losses of nationally significant fish, wildlife, and aquatic resources. Notwithstanding the Independent Expert Panel Review process, the science of wetlands and big rivers ecology, as well as an ever increasing community of practice in habitat restoration provide no valid justification that the proposed resource loss can be mitigated. Small projects are difficult to mitigate, and the scale of this project is one of the largest flood damage reduction projects proposed in the nation. As noted in the Assistant Secretary of the Interior’s August 26, 2011, letter to ASA Darcy, we continue to urge the Corps to focus on flood damage reduction project features that protect public health, safety, and infrastructure. The Service continues to strongly advocate the Corps adopt the St. Johns Bayou-only alternative to address the flood

protection needs of the communities and public infrastructure (e.g., I-55) in that basin. We believe adopting a St. Johns Bayou-only alternative will avoid another exhaustive, repetitive cycle of rebuttal between the federal agencies, and most efficiently and effectively address the most pressing, long-standing flood control issues in the project area.

Thank you for the opportunity to review the DEIS. We will continue our more detailed review of the document. Please don't hesitate to call me if you have questions concerning our comments.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Amy Salveter', is positioned above the printed name.

Amy Salveter  
Field Supervisor

cc: DOI, HQ, Washington, D.C. (Bean)  
EPA, Region 7, Lenexa, KS (Horchem)  
FWS, Region 3, Bloomington, MN (Wooley)





**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 7**

11201 Renner Boulevard  
Lenexa, Kansas 66219

March 20, 2013

Mr. Edward E. Belk, Jr., PE  
Director of Programs  
U.S. Army Corps of Engineers  
Mississippi Valley Division  
1400 Walnut Street  
Vicksburg, Mississippi 39108

Dear Mr. Belk:

As per our earlier discussion, the United States Environmental Protection Agency, Region 7, is providing our final comments on major issues previously identified in January 2013, regarding the Preliminary DEIS for the Saint Johns/New Madrid Project. The eight issues discussed below highlight areas for improvement with respect to compliance pursuant to NEPA and with the Clean Water Act Section 404(b) (1) Guidelines. Detailed comments specific to both NEPA and CWA compliance are contained as an attachment.

**1. Purpose and Need**

The document does not adequately describe the purpose and need of the proposed action in a clear and transparent way as to allow the public and decision makers the opportunity to understand the basic information regarding the project. This section must transmit information including who, what, where, how, and why as they relate to the underlying purpose and need to which the agency is responding in proposing the alternatives, including the proposed action. A more clearly defined project purpose is also necessary to facilitate the analysis of alternatives under both NEPA and CWA Section 404. As currently written, this section of the EIS does not provide a clear purpose, and confuses the reader by attempting to explain distinctions between flood risk, flood control, flood damage reduction, and flood risk management.

**2. Implications of the 2011 Flood and Executive Order 11988**

Information from the 2011 flooding should be incorporated such as the impact flooding would have on the alternatives proposed or the alternative selected. It is unclear what impact the flooding would have on the alternatives proposed or the alternative selected. Additionally, it is unclear to what extent the project is consistent with Executive Order 11988: Flood Plain Management.

**3. Flood Risk Management and Environmental Justice Executive Order 12898**

The document acknowledges the project will result in increases in Mississippi River elevation, but does not adequately address or quantify the increase in flood risk to those affected areas and communities. The document provides some discussion regarding environmental justice (EJ), yet does not sufficiently acknowledge the extent EJ communities down or upstream will be impacted by the project.



Printed on Recycled Paper



#### **4. Jurisdiction:**

The Jurisdictional Determinations for the project area should be included. This analysis is needed to adequately quantify impacts within the project area.

#### **5. Alternatives Analysis:**

Analysis of the full range of reasonable alternatives and selection of the least environmentally damaging practicable alternative, consistent with the CWA Section 404(b)(1) Guidelines, has not been adequately demonstrated.

Additional information/analysis is needed to: determine water dependency; demonstrate that all avoid and minimize measures have been incorporated; demonstrate that the full range of practicable alternatives have been evaluated; evaluate and compare of direct, secondary, and cumulative impacts of each alternative; and select the Least Environmentally Damaging Practicable Alternative.

#### **6. Impacts to Wetlands and Streams**

The 404(b)(1) analysis in Appendix E Part 7 does not appear to sufficiently consider cumulative, direct or secondary/indirect impacts to water quality, special aquatic sites (wetlands, riffle and pool complexes), and/or recreation. The document should provide a complete scientific evaluation of current functions provided by project area resources (i.e., fish and wildlife habitat, water quality maintenance, water storage, recreational use), most importantly, those linked to the connectivity (flood pulse) of the Mississippi River, and potential impacts to those functions under each alternative. Analysis of potential impacts to resources above the five year floodplain should also be considered in the DEIS.

Jurisdictional Determinations, a responsibility of the Corps describing Waters of the United States, have not been included. This information is essential in identifying wetlands during project implementation for purposes of avoiding impacts during construction, operation and maintenance of project activities.

#### **7. Adequacy of Compensatory Mitigation:**

The Advance DEIS has not demonstrated that the proposed compensatory mitigation actions would fully comply with the Compensatory Mitigation for the Losses of Aquatic Resources Final Rule (40 CFR Part 230, Subpart J). The rigor and detail of the comprehensive mitigation plan to demonstrate adequate compensation is commensurate with the degree of impacts (40 CFR 230.93(a)(1)). Sufficient information is not provided to demonstrate that compensation is likely to succeed or can offset significant impacts. Therefore, the document does not support the conclusions of “no significant adverse effect” under the Evaluation of Extent of Degradation of the Waters of the United States in Appendix E, Part 7 Section 404(b)(1) Evaluation Report and does not demonstrate compliance with the requirements of 40 CFR 230.10(c).

Section 2.3 of the document states “There is a level of uncertainty with mitigation since specific tracts have not been identified to date.” Because specific lands have not yet been identified, it is difficult to discern whether the DEIS demonstrates that unavoidable impacts to aquatic resources can be adequately compensated. This information must be provided in the DEIS or in a separate supplemental document with public comment if the Corps decides to pursue this option.

The document does not fully address previous comments provided by the EPA, including: hydrologic alteration, management of the flood pulse, restoration of forested wetlands, and adequate compensation for stream impacts.

Also, the document does not indicate that mitigation sites will be designed to be self sustaining and protected in perpetuity. The document also does not address the requirements for proposed preservation activities (40 CFR § 230.93(h)).

Use of State land (MDC Ten Mile Pond Conservation Area and Big Oak Tree State Park) as mitigation may not be compliant with 40 C.F.R. § 230.93(a)(3) because these lands are a part of "public programs already planned or in place." Also, these lands may not meet 40 C.F.R. § 230.92(h) requirements for preservation.

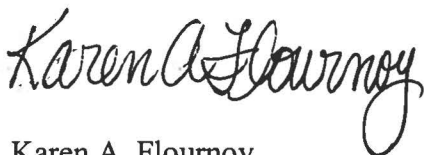
The costs of mitigation are not adequately assessed and the cost/benefit ratio cannot be fully determined. The document should clearly outline how mitigation costs were derived and these costs should be specified when comparing alternatives.

**8. Use of Models:**

The Advance DEIS is unclear if the models used in support of decisions have been certified. Several issues and criteria identified by the Model Certification Review Report have not been addressed. There are also a number of questions on the way HGM is used to calculate impacts further described in the attached comments.

Thank you for the opportunity to provide our comments on the preliminary DEIS. We look forward to our continued collaboration on this interagency effort. Please do not hesitate to contact us if you have questions or need additional information. You may also contact Steve Kovac at 913-551-7698 or Jeffery Robichaud at 913-551-7146 of our staffs for questions or clarifications regarding compliance with Section 404 of the CWA or NEPA (respectively).

Sincerely,



Karen A. Flournoy  
Director  
Water, Wetlands and Pesticides Division



Ronald F. Hammerschmidt, Ph.D.  
Director  
Environmental Services Division

Enclosure

cc: Brian Chewning  
U.S. Army Corps of Engineers



**Major Issues Identified by the Environmental Protection Agency  
With Additional Comments  
IAT Advance Copy Draft Environmental Impact Statement  
for the St. Johns Bayou New Madrid Floodway Project  
March 20, 2013**

## **1. Purpose and Need**

**Justification for the project is inadequate in the “Purpose and Need for Project” section.**

- The Advance DEIS does not provide a clearly defined purpose and need for the project beyond “flood risk management.” Previous comments provided in September 2011 included the following: The EPA appreciates the acknowledgement that since the time of project inception, national and Corps policy has transitioned from “flood control” to “flood risk reduction.” Concurrent with this policy transition, environmental restoration has also become a priority mission of the Corps. This evolution in policy should compel precision and exactness in describing the public safety, property, infrastructure, activity, etc. that needs to be afforded flood risk reduction, and to what degree, as well as the project’s implications on environmental restoration of the St. Johns and New Madrid basins.

### **Basic Project Purpose is Unclear**

The stated project purpose in Sections S2 Project Purpose and Need, page xii and 1.1 Project Purpose, page 1, is flood risk management. These sections do not include economic growth or agricultural intensification as the basic project purpose, but the document discusses these interests elsewhere as objectives for the project (“Project Specific Objectives” in Section 1.3.2, the “Federal Objective” in Section 2.1, and “Principles and Guidelines” in Section 2.4). These interests must be included in the basic project purpose if they are to be used to evaluate alternatives. It is only the basic project purpose for which alternatives can be evaluated per the Clean Water Act Section 404 (40 CFR 230.10(a)). Evaluation of alternatives against interests not specified in the basic project purpose is not in compliance with the regulations.

The EPA recommends the DEIS be revised to clearly state the basic project purpose and describe the “Project Specific Objectives” and other interests in the appropriate context. Some of these factors may be better described as benefits of the proposed action, such as social well-being and economic development. Others are mandated by law, such as compensation for unavoidable impacts. Recognizing the importance of the flood pulse is a stated objective; but this is a resource function that should be a major component of evaluating impacts of each alternative in the environmental impact analysis. Restoration of Big Oak Tree State Park is a potential compensatory mitigation strategy and does not belong in the discussion of purpose and need or alternatives. The Federal Objective is a factor in determining project feasibility. Each of these interests should be considered and discussed in the appropriate context and section of the DEIS. Within Section 2.1 Preliminary Alternatives, phrasing of one of the Project Specific Objectives changes from “manage flood risks for social well-being” to “managing the flood pulse for social well-being.” Reducing flood risk and damages can be quite different from managing the flood

pulse. In addition, “managing” the flood pulse contradicts the objective to “recognize the importance of the flood pulse.”

### **Need for Action Has Not Been Adequately Demonstrated**

The discussion in Sections S2 Project Purpose and Need and 1.2 Need for Action does not provide precision and exactness in describing the public safety, property, infrastructure, activity, etc. that needs to be afforded flood risk reduction, and to what degree. Maps, tables, and other description of the populations affected by flooding, the frequency of isolation, and the associated costs should be provided. Similarly, the exact location, frequency, duration, and damages of public infrastructure should be described. The need of the project should be based on an actual goal for reduction of these damages. While the document appears to have fully considered agricultural damages and the potential benefits of agricultural intensification, the facts and figures pertaining to public safety, property, infrastructure, etc. are not included.

The document states that the flooding problems of East Prairie are not due to impounded interior runoff (page 19), and Section 1.2 page 3 states that “the project would not entirely alleviate all of the city’s flooding and drainage problems.” However, no alternatives have been developed with the express purpose of addressing these drainage problems for East Prairie. Similarly, the document does not provide essential information regarding the repopulation of the New Madrid Floodway post 2011 activation. On page 28 the document states that the Village of Pinhook has expressed a desire to relocate, but relocation of these residents is being considered outside of this project. The document must clearly articulate the degree of flood risk reduction needed for public safety and infrastructure and evaluate alternatives against that measure.

The need for action is not clearly presented in the document. The Abstract, page i that states, “The flood pulse is no longer the driving force in the St. Johns Bayou and New Madrid Floodway project area. The annual disturbance associated with farming (e.g., disking, plowing, land leveling, herbicide application, etc.) is the current principle driving force that limits ecological productivity and habitat.” This statement is not supported by scientific evidence and negates the need for flood management. Page 121 states “current conditions show that farming is very profitable and would likely remain so under future without-project conditions.” This fact calls into question the concept presented in the Advance DEIS that meeting the needs for social well-being is dependent on increasing economic benefits to agricultural areas. Section 1.2, page 2, states that flooding of adjacent agricultural land is an impediment to the area’s future prosperity; however specific information regarding flood damages and the effects on the local economy are not provided.

The document lacks an adequate description of the needs of the proposed action and without maps and clear language in the Executive Summary, Introduction, and Purpose and Need Statement may not engage the public and decision makers in a call to action.

## 2. Alternatives Analysis

- It is unclear that the Advance DEIS adequately demonstrates to the public that the Tentatively Selected Plan (TSP) complies with the Clean Water Act 404(b)(1) Guidelines (Guidelines).

### **Full Range of Alternatives and Selection of the Least Environmentally Damaging Practicable Alternative Has Not Been Adequately Demonstrated**

- It is unclear that the Advance DEIS demonstrates the TSP represents the least environmentally damaging practicable alternative, consistent with 40 CFR Part 230.10(a). Section 2.1 indicates that several structural alternatives for the New Madrid Floodway portion of the project now appear to have been eliminated from further consideration without presenting to the public the current analysis supporting such a decision. The evaluation of practicable alternatives which would have less adverse impacts on the aquatic ecosystem, as presented in the Section 404(b)(1) Evaluation Report (Appendix E Part 7 of the Advance DEIS) consists of one sentence, "Alternative to avoid and minimize project impacts has been selected as part of the Recommended Plan."

40 CFR § 230.10(a) prohibits the discharge of dredge or fill material if there is a less environmentally damaging practicable alternative to the proposed discharge. The level of detail of the alternatives analysis and assessment of impacts is insufficient given the complexity of issues, scale of the project, and the potential severity and magnitude of adverse impacts to the aquatic ecosystems (see also the 1993 Memorandum to the Field, *Memorandum: Appropriate Level of Analysis Required for Evaluating Compliance with the Section 404(b)(1) Guidelines Alternatives Requirements*).

The Advance DEIS does not adequately support the position that the project is water dependent. A more clearly defined project purpose will facilitate the analysis of water dependency under the CWA Section 404(b)(1) Guidelines. In accordance with the Guidelines "practicable alternatives that do not involve special aquatic sites [e.g. wetlands, riffle/pool complexes] are presumed to be available, unless clearly demonstrated otherwise. In addition, where a discharge is proposed for a special aquatic site, all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise" (40 CFR 230.10(a)(3)).

The document lists a range of potential actions but does not demonstrate consideration of the full range of practicable alternatives. The alternatives analysis appears to narrowly focus on one activity at a time to determine the ability of an activity to meet project objectives, rather than combining activities to generate a meaningful range of alternatives. Alternatives that combine multiple non structural approaches, or both structural and non structural approaches, should be considered. Those alternatives should be re-examined and carried through a full analysis of their environmental impacts and compared to each other in order to allow for a fully-informed decision on how to best meet the project's basic purpose.

Additionally, considering activities individually as standalone alternatives for both NMF and SJB basins combined, rather than separately for each basin, presents unnecessary obstacles in the



evaluation. The environmental factors, including those influencing flooding, are not the same for the two basins; therefore, evaluation of the feasibility and impacts of each alternative should be evaluated separately. For example, the activity of relocation was discussed in Section 2.1.4.5, pages 28-29, as a standalone alternative for both basins. The populations of the basins are not similar, and the flood risks for the communities are not due to the same factors. Additionally, Pinhook residents in the NMF must live with the constant risk of floodway activation, and according to the document, have expressed an interest in relocation since the 2011 floodway activation. However, the discussion states that “relocation of the community [Pinhook] is being considered independently of this project or USACE.” Evaluation of relocation of Pinhook is both essential as an alternative for the NMF as well as to establish the need for the project.

The discussion regarding the alternative of raising road surfaces would also benefit from a basin-specific evaluation. The DEIS does not address whether there are key roads/corridors that could be raised to eliminate problems of community isolation. Examining this alternative independently for the each basin would generate additional alternatives and/or identify avoidance and minimization measures. By evaluating raising road surfaces as a standalone alternative, the effects of potential relocation of Pinhook were not considered in the analysis. An alternative that allows flooding up to approximately 296.4 feet in the St. Johns Basin should be developed. At this elevation Interstate 55 could remain open.

Other examples include the Refuge/Conservation Area alternative in Section 2.1.4.1, page 23, which was considered as a “standalone” alternative. However, it may be more reasonable to consider this activity in combination with other activities, such as community relocations, elevation of roadways, and silviculture. Different sizes of refuges could also be evaluated. Additionally, consideration of a Refuge alternative to resolve issues for both the St. Johns and the New Madrid Floodway basins creates unnecessary difficulties in the analysis. The refuge activity should be fully considered for the New Madrid Floodway basin in combination with other activities that may address issues in the St. Johns basin. Similarly, the activities of silviculture and conversion to flood-tolerant crops (Sections 2.1.4.2 pages 23-24 and 2.1.4.3 pages 24-25, respectively) were considered as standalone alternatives and should be considered in combination with other activities.

The DEIS should provide a clear explanation of what is meant by “net economic development” and how alternatives were analyzed in terms of meeting this objective. A recurring theme of the document is that elimination of alternatives appears to be based on economic justification rather than an evaluation of impacts and practicability (examples: levee alignments, refuge/conservation area, agriculture to silviculture, elevation of road surfaces, relocations). The Guidelines state that practicable alternatives are those that are “available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes” (40 CFR 230.10(a)(2)). The 1993 Memorandum to the Field further clarifies that “the determination of what constitutes an unreasonable expense should generally consider whether the projected cost is substantially greater than the costs normally associated with the particular type of project.” The practicality of the activities/alternatives should be screened against each other and normal or average costs for flood risk reduction, rather than potential economic benefits of the alternatives. Further, the alternatives analysis should include a

breakdown of all known costs for each activity/alternative as a basis for comparison and evaluation of practicability.

The tables in the DEIS that compare alternatives are lacking the full range of alternatives and their associated impacts. For example, Table 2.3, page 31, is insufficient for comparison and screening of alternatives:

- All preliminary activities/alternatives are not included in the table.
- Environmental impacts of each activity/alternative are not provided.
- Inclusion of measures to avoid and minimize impacts is out of place as this is a requirement of the CWA Section 404(b)(1) Guidelines, not an alternative, and should be specified for the overall project and each activity/alternative.

Similarly, Table 2.8, page 57, does not include Alternative 1 – No Action in the comparison, except indirectly as the baseline for FCUs.

We recommend more closely examining an alternative that would limit work to the St. Johns Basin. We also recommend that alternatives that examine different alignments for the levee closure in the Floodway be examined to determine if there are other alignments that would reduce environmental impacts and provide opportunities for environmental restoration as well as needed flood damage reduction. Evaluation of alternative levee alignments should be updated from past analyses (much of this appears to date from the 1980s) and should include the direct and indirect impacts, benefits and costs associated with each of these alternatives.

Discussions of compensatory mitigation are included throughout the document rather than in the appropriate sequencing process of avoid, minimize, then mitigate, according the CWA 404(b)(1) Guidelines. For example, the mitigation discussion in Section 2.3, pages 43-51, is within Section 2.0 Alternatives Including the Proposed Action. However, this section does not provide a comprehensive discussion demonstrating that all potential avoidance and minimization measures have been included in the assessment, as required by the CWA Section 404 (b)(1) Guidelines. Avoid and minimize measures are only discussed for channel construction access and pump operation activities, but other potential avoidance and minimization measures are not provided (such as placing dredged material from ditches in uplands). The 1993 Memorandum to the Field states “it is not appropriate to consider compensatory mitigation in determining whether a proposed discharge will cause only minor impacts for purposes of the alternatives analysis required by Section 230.10(a).” In comparing the alternatives in Table 2.8, page 57, it is unclear how mitigation may be reflected in these numbers. Comparison of FCUs is more applicable in the context of indirect impacts and mitigation planning and should not be used in lieu of a direct comparison of wetland acres and linear feet of streams impacted in the alternatives analysis.

The document does not define the needed flood risk reduction for East Prairie or provide information regarding the degree of protection afforded by each alternative. Page 19 states flooding in East Prairie “is not necessarily due to impounded interior runoff,” yet a few sentences later indicates “flood problems associated with impounded interior runoff can affect flooding conditions in East Prairie.” The document would benefit from addressing this discrepancy, and clearly explaining the causes(s) of flooding in East Prairie to aid in assessing alternatives to attenuate this flooding.

Some alternatives appear to have been dismissed based without providing a clear post-project assessment of direct, secondary, and cumulative impacts. For example, the discussion of conversion to silviculture and flood-tolerant crops in Sections 2.1.4.2 and 2.1.4.3, respectively, appear to have been dismissed largely on the assumption that since farmers haven't already converted to these crops, they will never convert. These alternatives were also considered to provide only temporary flood risk management. However, this concept of permanent versus temporary flood risk reduction was not discussed for other alternatives. Any alternative that includes engineering structures or requires continued operation and maintenance could be considered temporary.

### **Analysis and Consideration of All Potential Impacts Has Not Been Adequately Demonstrated**

- The Advance DEIS lacks a clear articulation of the secondary effects of the proposed project would be on the aquatic ecosystem in terms of altered hydrology, e.g., timing, extent, frequency, duration and depth of inundation and/or saturation. The draft document appears to limit evaluation of wetland impacts to only those resources within the current 5-year floodplain. Without a detailed explanation of what the actual hydrologic effects would be, it is difficult to determine whether this limitation is appropriate. We note in Appendix B: Economics of Alternatives that it appears benefits attributed to proposed project features extend to areas beyond the 5-year floodplain. It is unclear why the scope of analysis for analyzing project impacts would be different than that used for analyzing benefits.
- The Section 404(b)(1) Evaluation Report contained in Appendix E Part 7 asserts that there are "no significant adverse effects expected" through completion of the project. This assertion is unsubstantiated in the Advance DEIS.

### **Analysis and Comparison of Direct Impacts:**

The document does not clearly describe how impacts were calculated, or provide an estimate and comparison of direct, secondary and cumulative impacts for all alternatives. Discussion of significant degradation of Waters of the United States is not provided to support the conclusions of "no significant adverse effect" under the Evaluation of Extent of Degradation of the Waters of the United States in Appendix E, Part 7 Section 404(b)(1) Evaluation Report and demonstrate compliance with the requirements of 40 CFR 230.10(c). The burden of proof to demonstrate compliance with the CWA Section 404 Guidelines rests with the applicant of the project (40 CFR 230.12(a)(3)(iv)).

The DEIS does not clearly define direct impacts of the proposed alternatives. Assessment of direct impacts appears to have been combined with assessment of indirect impacts in the hydrogeomorphic model. This is inconsistent with USACE and EPA national practice. Section 4.8.1, page 127, states "the HGM is considered the best tool available to quantify *indirect* impacts associated with the project" [emphasis added]. Figures for direct, indirect or secondary, and cumulative impacts should be provided separately for each resource and discussed clearly and early in the document. However, tables provided in the Introduction and Section 2 Alternatives Including the Proposed Action do not provide detailed figures of the direct, secondary, and cumulative impacts to both wetlands and streams for each activity/alternative.

Figures for direct impacts to wetlands are not provided until the HGM discussion on pages 131 and 135. Page 131 states that the Alternative 2.1 will result in total direct impacts (total clearing or filling) of 673 acres of vegetated wetlands “due to channel modifications.” Then page 135 states that the TSP, Alternative 3.1, “would result in a 264 acre reduction in the direct impact footprint from the direct clearing, ditch excavation width, and spoil pile reductions when compared to alternative 2.1.” So, the TSP would result in 409 acres of direct wetland impacts in the SJB, plus page 153 states that 9 acres of impact (resource not specified) will be directly impacted in the NMF. Additionally, these figures for the TSP (409 acres for SJB + 9 acres for NMF = 418 acres total) do not add to the 416 acres of direct impacts provided on page 9 of Appendix E Part 7.

It is unclear which specific activities cause which direct impacts and if the impacts of the proposed levee footprint at the NMF opening are included. The DEIS should clearly break out which activities result in which impacts and further describe and document each impact on maps. Calculations based on the figures provided for the levee footprint (1500 feet long with a base of 302') sum to 10.4 acres. However, only 9 acres of direct impacts are discussed. Is some of the area of the levee footprint considered to be upland or stream? Direct impacts to streams in the NMF have not been provided. Has the USACE determined area to be upland based on clearing already conducted, or have wetland delineations been completed for the entire area? The DEIS should also address direct temporary impacts that may be associated with construction activities. These issues should be clearly addressed in the EIS.

Section 2.2.3, page 36 compares magnitude of direct stream and wetland impacts in the SJB basin to the magnitude of secondary impacts in the NMF. This comparison is inappropriate because the resources and functions are different and cannot be directly correlated to one another.

#### **Primary Impact Area and Calculation of Indirect Impacts:**

The document does not support the concept that the primary impact area of the project is within the 5-year floodplain. The document states, page 74, “the Village of Pinhook becomes isolated at the approximate 10-year flood elevation.” If the project is designed to reduce flooding at Pinhook, then there would be significant impacts at the 10-year floodplain elevation. However, page 90 indicates that, “Although, USACE acknowledges that wetlands are located at elevations greater than the five-year flood frequency and that the project would reduce periodic flooding through flood risk reduction measures, wetland functions associated with lands above this elevation were not assessed because of the insignificant potential impact of the project on these lands.” How was it determined that potential impacts in areas above the 5-year floodplain would be insignificant?

Page 286 suggests that impounded interior runoff or backwater flooding do not play a significant role in maintaining wetlands status in areas above the five year floodplain, rather, hydrology is maintained by precipitation and groundwater interactions. The DEIS acknowledges some uncertainty exists regarding this assumption and to address that risk, the project would be monitored after constructed. This assumption is fundamental to an accurate assessment of project impacts, comparison of those impacts across alternatives, and formulation of mitigation necessary to offset unavoidable impacts. The scientific basis for this assumption needs to be

provided in the context of a natural river floodplain with backwater flooding, and the primary hydrological and ecological drivers of the floodplain system need to be defined. To address uncertainty we recommend concomitant hydrologic modeling in areas where the greatest uncertainty exists, e.g., areas above the five year floodplain, on both mitigation sites and other lands as appropriate.

Page 54 states that the greatest impact to project area wetlands is due to an indirect impact associated with changed frequency and duration of flooding. Impacts could also stem from project-induced changes in timing, location, and degree of inundation/saturation of flooding. The DEIS does not appear to clearly describe the full component of potential indirect impacts to project area resources and how these impacts might vary across different alternatives. The DEIS needs to acknowledge that the TSP and other alternatives involving pump operations only provide *limited* connectivity with *altered* hydrology to the area. Page 41, the document states that “natural wetlands would still be seasonally connected” however this amounts to only 26 days during the growing season. After April 15 no back water flooding would be passed into the NMF at elevations over 284 feet and pumps would be turned on, draining water from the area. The majority of flooding during fish spawning and rearing time, shorebird use, and wetland growing season would be eliminated. This also seems to disregard the important hydrologic interactions not only between backwater and headwater flooding, but also those interactions involving surface (inundation) and ground water (saturation) that occur in these areas, and that significant changes in the backwater flooding due to the project would likely have repercussions on the extent, frequency, duration and depth of inundation and/or saturation in these areas as well. Further clarification on this important issue is necessary and additional analysis and modeling of hydrologic alterations due to proposed activities may need to be conducted. A comparison of model output and/or hydrographs for the area for the alternatives is needed.

The descriptions of gate and pump management avoidance and minimization strategies, page 38, regarding isolating flood pulse for certain species is not consistent with recognizing the importance of the flood pulse for overall ecological health. This section does not address the hydrologic requirements for plants that make up the vegetated wetlands in the area and provide shelter, food, and migration corridors between flooded agricultural lands. The hydrologic regime for maintenance of area plant communities appears to have only been considered in the context of restoration of Big Oak Tree State Park rather than the entire project area.

Page 61 concludes that, “the greater the area removed from flooding, the greater the environmental impacts.” Yet, the preliminary document does not provide a clear description of the amount of area that would be removed from flooding for each of the alternatives. Figure 3.12 is a very helpful depiction of the existing flood return intervals in the New Madrid Floodway. It would also be useful to include similar images depicting flood return intervals for each alternative. Furthermore, we recommend a table be included in the DEIS that shows the corresponding amount of total acreage and wetland acreage that would and would not be flooded (compared to current conditions) for each alternative.

Page 114 indicates “no changes to overall land use classification would be expected regardless of the chosen alternative” and “no conversion of forested areas to agriculture would be expected.” We recommend the DEIS clearly describe the basis for these assumptions. Similarly,



consideration of Wetland Reserve Program enrollment in the document is not well supported and may not have been realistically calculated in assessment of impacts, practicability of alternatives, and future scenarios for the area post project (Section 2.1.4.2, page 24).

### **Gaps in Impacts Assessment:**

There are functional and geographic areas where additional analysis of potential impacts is needed. Information is not provided regarding the secondary impacts to streams as a result of levee closure and pumping, such as how hydrology of the ditches will be impacted. Increasing the depth of area ditches could cause stability problems for connected ditches, such as head cuts, culvert replacements, impacts to roads, etc. Additionally, what will be the secondary impacts to adjacent wetlands due to increasing the depth of the ditches, and presumably the lowering of the water table? These impacts should be addressed in the DEIS.

Section 2.1.3 Levee Closure Alternatives, pages 21-23, only provides the figures for costs of alternate levee alignments and does not provide numbers on impacts of these alternatives. What is the source or basis for the figure used for mitigation costs? The description of these alternative alignments does not include a breakdown of the direct impacts of the levee footprints themselves. The Interagency Review Team in Missouri has prioritized forested wetlands, particularly bottomland hardwood forests with river connectivity, as one of the most important resources to avoid damages. Mitigation of unavoidable impacts to forested wetlands is required at a ratio of 4 or more acres replacement for every one acre of impact. The analysis of each alternative, including alternate levee alignments, should clearly articulate impacts to forested wetlands. The description of impacts for alternate levee alignments should also include numbers on the acreage that would remain hydrologically connected to the Mississippi River.

### **Impacts to Water Quality, Recreation, and Special Aquatic Sites Have Not Been Adequately Addressed**

- The 404(b)(1) analysis contained in Appendix E Part 7 does not appear to sufficiently consider cumulative, direct or secondary/indirect impacts to water quality, special aquatic sites (wetlands, riffle and pool complexes), and/or recreation.

The EPA recommended in the September 2011 comments that the DEIS needs to:

- Provide a complete scientific evaluation of current functions provided by project area resources (i.e., fish and wildlife habitat, water quality maintenance, water storage, recreational use), most importantly, those linked to the connectivity (flood pulse) of the Mississippi River, and potential impacts to those functions under each alternative. Additional analysis is recommended to adequately describe the resources within the project area.

### **Water Quality:**

Page vii states that “water quality will be improved as a result of mitigation.” However, this has not yet been demonstrated. We recommend the DEIS consider additional measures to maintain and improve water quality. Water quality should also be monitored post-project; we recommend installing a real time water monitoring station (such as used by the US Geologic Survey) at the mouth of both the St. Johns and New Madrid basins. Pre-construction, construction period, and post construction real time water monitoring should be conducted until mitigation is considered



to meet all performance standards. If at any time water quality is worse than pre-project monitoring then adaptive management should be triggered and additional mitigation required.

Page 232 indicates that the water quality analysis for the project show the authorized project would reduce total phosphorus and nitrogen export by 15% or more. What assumptions were used for this model, and have these findings been corroborated with appropriate water quality experts on the Independent Expert Panel Review, US Department of Agriculture, US Geologic Survey or others involved in the previous SPARROW modeling effort? Furthermore, page 275 suggests project implementation would provide a reduction or delay in the growth of the hypoxic zone in the Gulf of Mexico. The basis for these conclusions needs to be provided in the document.

### **Recreation and Flood Storage:**

The DEIS does not adequately address impacts to recreation and flood storage functions. These resources are not included in the assessment and comparison of impacts for each alternative and are not listed in Table 1.2, page 16, "Relevant issues, resources, and concerns," for the project area.

For example, impacts to hunting/fishing and tourism in the project area and on the Mississippi River as a result of the TSP, or potential increases in these and other recreational activities for each of the alternatives, is not provided in the DEIS. Recreation is not addressed until Appendix E, Part 3, Wetland Goods and Services and the conclusion (as well as others within this Appendix) is not supported by science. This does not include a full assessment of the recreational value of area resources, such as Big Oak Tree State Park, hunting and fishing habitat on private and publicly owned lands, Ten Mile Conservation Area, or recreation on the Mississippi River.

The flood storage and attenuation benefits that occur because of the flood pulse are not being adequately quantified. Page 92 describes discussions held during the 1-2 October 2012 site visit by agency representatives. We recommend deleting this discussion from the DEIS. Major factors in the impacts assessment should be based on the best available science and suitably referenced in literature and other documentation. The EPA has comments on the project recommending that the EIS fully consider flood water storage of all lands (regardless of wetland status) as a major area resource. The function of flood storage, both of Mississippi River backwater flooding and interior runoff, is a major factor for the purpose and need of the project and comparison of alternatives. Flood storage should be quantified for each alternative.

The discussion regarding economic benefits of the flood pulse and lands connected to the Mississippi River and area ditches should include an assessment of the monetary value of flood storage and recreation. Increases in flood water storage result in decreased flooding and flood damages elsewhere. Economic gain as a result of fishing, hunting, tourism, and other recreational activities can also be included.

Section 2.1.4.1 Refuge/Conservation Area, page 23 states that this alternative would "offer no relief from flooding to the remaining 62, 797 acres of land in the five-year flood frequency." We recommend providing the scientific basis for this statement. A substantial refuge or conservation area may significantly increase the flood storage capacity of the New Madrid Floodway basin

thus reducing flood pressures on other areas. The impacts, both adverse and beneficial, of this activity are not provided. The analysis should include acreages of wetlands preserved or restored, acreages of lands connected to the Mississippi River, recreational values, increases in water storage, as well as benefits to water quality and fish and wildlife. This section also indicates that a refuge is not “economically justified” but does not provide any figures to support this. The value of potential increase in recreation for the area is absent from the evaluation of this alternative. It is unclear why the expansion of refuge and conservation areas is not feasible as an alternative due to the local community being unwilling to sell the necessary lands, yet expansion of Big Oak Tree State Park is considered feasible as an activity for compensatory mitigation.

### **Special Aquatic Sites:**

Special aquatic sites are sanctuaries and refuges, wetlands, mud flats, vegetated shallows, coral reefs, and riffle and pool complexes (40 CFR 230 Subpart E). “They are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region” (40 CFR 230.3(q-1)).

There are functional and geographic areas where additional identification of special aquatic sites and analysis of potential impacts is needed. For example, discussion of area streams/ditches is insufficient, including identification of riffle/pool complexes. The purpose and need for the proposed activities on area ditches has not been provided. No assessment of alternatives was provided for ditch work, such as, incorporating Natural Stream Channel Design, and developing side channels and/or additional adjacent wetlands to increase flood capacity. The DEIS should provide a clear purpose and need for activities on area streams as well as describe the expected benefits and adverse impacts. Impacts to streams should be included in the comparison of alternatives in Table 2.8.

The potential for significant degradation of area streams is not included, and assessment of the presence of riffle/pool Special Aquatic Sites is not provided. Page 48 of the document states, “some of these artificially created canals have stream characteristics and functions” yet Appendix E Part 7, page 9, simply states that effects on special aquatic sites, riffle and pool complexes, is “not applicable.” Additionally, page 37 of the document states “the decrease in mussel populations is most likely due to the recent basin-wide ditch maintenance that has occurred (vegetative and sediment removal).” This indicates that the type of ditch maintenance proposed in the TSP can have significant adverse impacts. In addition, secondary impacts to area streams as a result of hydrologic alteration and elimination/reduction of the flood pulse in the NMF are not discussed for all the alternatives, nor are they reflected in the comparison of alternatives in Table 2.8.

There is also no specific or geographic information provided regarding the direct impacts to wetlands within the areas where ditch maintenance will occur. How were the estimates of impacts to wetlands assessed for these areas? Can fill of these wetlands be avoided, or are there alternatives that would have less impact, such as placing dredged material in uplands?

### 3. Adequacy of Compensatory Mitigation

#### **Adequate Compensation for Impacts Has Not Been Demonstrated**

- **The Advance DEIS does not clearly demonstrate that the proposed actions would be fully compliant with the Compensatory Mitigation for the Losses of Aquatic Resources Final Rule (40 CFR Part 230, Subpart J).**
  - Section 2.3 of the Advance DEIS states “There is a level of uncertainty with mitigation since specific tracts have not been identified to date.” Because specific lands have not yet been identified, it is challenging to discern whether the DEIS demonstrates that unavoidable impacts to aquatic resources can be adequately compensated.
  - The DEIS does not provide a clear, detailed articulation of how proposed compensatory mitigation features specifically compensate for the project’s effects on area hydrology, in particular, the timing, extent, frequency, duration and depth of inundation and/or saturation.
  - The DEIS lacks complete information to address the project’s indirect impacts on areas proposed as mitigation sites. The TSP’s avoid and minimize features allow for riverine flooding only during winter months, not during the growing season. As a result, the alternative would appear to inhibit wetland functions during the growing season thereby minimizing benefits of any mitigation within the project area.
  - The Missouri Interagency Review Team requires a minimum of 4:1 replacement for direct impacts to forested wetlands.
  - The EPA questions the use of batture lands for compensatory mitigation. Because these lands are already connected to the Mississippi River, such areas would not appear to provide replacement of lost functions associated with severing wetlands within the project area from natural connectivity to the River.

#### **Compliance with CWA Section 404:**

The DEIS does not adequately demonstrate compliance with the Mitigation Rule (33 CFR 332 and 40 CFR Part 230, Subpart J), or address technical and ecological feasibility of the proposed activities to effectively compensate for impacts. The document does not address previous comments provided by the EPA, including: hydrologic alteration, management of the flood pulse, restoration of forested wetlands, and adequate compensation for stream impacts. Similar to the requirements for the evaluation of alternatives, the rigor and detail of the comprehensive mitigation plan (which should be included in the DEIS) to demonstrate adequate compensation is commensurate with the degree of impacts (40 CFR 230.93(a)(1)). Sufficient information is not provided to demonstrate that compensation is likely to succeed or can offset significant impacts. Therefore, the document does not support the conclusions of “no significant adverse effect” under the Evaluation of Extent of Degradation of the Waters of the United States in Appendix E, Part 7 Section 404(b)(1) Evaluation Report and does not demonstrate compliance with the requirements of 40 CFR 230.10(c).

In evaluating whether compensation could offset significant impacts, the DEIS should consider, among other things, the severity of the impact at issue and the likelihood of being able to recreate the lost values. Some values (e.g., flood storage) are easier to offset than others (e.g., ground water recharge). Likewise, some types of compensation (e.g., in-kind restoration in an appropriate geographic area) are more likely to succeed in offsetting impacts than are other types

(e.g., preservation or offsite creation). Comments submitted by the EPA advised that functional losses resulting from elimination of the flood pulse and altered hydrology would be difficult to replace and may only be successfully mitigated by reconnecting equivalent areas within the Middle Mississippi River to natural flood pulses. To demonstrate that it's possible to compensate for all losses and to achieve compliance with 230.10(c), the mitigation plan must meet two basic tests:

1. It should prevent or offset the adverse impacts that would otherwise give rise to a finding of significant degradation;
2. It should have a good chance of success.

The DEIS should be revised to include the appropriate level of planning and documentation elements (c)(2) through (c)(14) required by the Mitigation Rule (40 CFR §230.94 and 33 CFR § 332.4). A map of each mitigation parcel specifying type of mitigation should be provided; Figure 2.7 does not provide sufficient detail. It is unclear where overlap between the different types of mitigation occurs and how everything fits together. The document breaks out resource types (shorebirds, wetlands, ducks, fish, etc.) however it is not clearly described how the sum of all the parts adequately offsets impacts. The DEIS should address overall ecological integrity and condition of the watersheds pre and post project. Separating components to the extent provided in the DEIS does not adequately address ecological concerns.

The DEIS does not indicate that mitigation sites will be designed to be self sustaining and protected in perpetuity as required by the Mitigation Rule 40 CFR § 230.97 (and 33 CFR § 332.7). The DEIS needs to be revised to address the requirements of the rule to:

- minimize active engineering features (e.g., pumps);
- appropriately locate mitigation sites to ensure that natural hydrology and landscape context will support long-term sustainability;
- provide active long-term management and maintenance to ensure long-term sustainability (e.g., invasive species control, maintenance of water control structures, easement enforcement);
- provide long-term financing mechanisms.

The proposed mitigation relies on extensive engineering and management of water levels through gates and pumps. This significantly increases the risk of the mitigation, both of structural failure and failure to manage the water levels as proposed. The DEIS must describe assurances that will be put in place to ensure that water levels and mitigation sites would be managed appropriately in perpetuity.

More description is needed regarding the coordination requirements (who, how, when) for implementation of compensatory mitigation activities. Specifically, the details of how the Interagency Review Team will be consulted to review and approve site specific mitigation designs, conduct compliance reviews, consult and approve adaptive management plans, and ensure corrective measures are implemented if needed. On page 299 the details of how this will be implemented should be spelled out in the DEIS, and should include discussions of third party oversight of mitigation activities and financial assurances.

Similar to the discussion of assessment of impacts, the assessment of required compensatory mitigation needed to offset the direct impacts to forested wetlands must be separately and

explicitly described in the document. Mitigation for direct impacts should be consistent with current Interagency Review Team policies and procedures. The EPA has recommended that the USACE should consult with the Missouri IRT to determine appropriate levels of compensation for this project and standards to which it holds permittees and mitigation providers. Absent site specific consultation, the DEIS should, at a minimum, incorporate the normal standard for mitigation of forested wetlands in Missouri at a rate of no less than four acres of mitigation for every one acre of impact (4:1 replacement). Temporal lag of functional replacement should be more clearly described in the DEIS so that adequate mitigation ratios can be determined. Use of the HGM model to calculate mitigation for direct impacts is not the standard practice in Missouri and does not directly meet the requirements of the Mitigation Rule to ensure that compensation occurs at a minimum ratio of 1:1.

Ecological feasibility of proposed mitigation activities is not adequately addressed in the DEIS. For example, page xx, states “the tentatively selected plan proposes to take agricultural land, most of which is at low elevation and frequently subject to Mississippi River flood pulses, and revert it to historic forest habitat.” With the addition of the project pumps the areas that are wet will be quickly pumped dry during the growing season. Any acres of forest planted will unlikely become forested wetland because of the altered hydrology (inappropriate timing, frequency, and duration of flow to support the desired habitat).

#### **Preservation:**

The DEIS does not adequately address the requirements of the Mitigation Rule for proposed preservation activities (40 CFR § 230.93(h)). Preservation means the removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions. The mitigation rule requires that for preservation all several tests must be met (40 CFR § 230.93(h)).

A description of how each proposed parcel for preservation credits meets these requirements must be provided. The assessment of threats should include how the TSP will threaten existing wetlands through drainage and altered hydrology, and if it's possible for the proposed mitigation areas to meet test iv of 40 CFR § 230.93(h). The standard practice for the Missouri IRT is to require preservation of 10 acres of land for every one acre of impact (10:1 replacement ratio). HGM calculations should be also adjusted accordingly.

#### **Monitoring:**

Page 322: Table 6.5 provides a list of monitoring requirements. The table does not appear to use the HGM variables. If the project is going to use HGM to project mitigation needs then it should also use HGM to evaluate mitigation parcel success. One of the ecological performance standards should be to meet the reference standard for each of the variables in the project area for each HGM class. The DEIS should define where and how the reference standard was determined.

The DEIS needs to clarify (such as on page 323) if the mitigation plans will rely on natural revegetation rather than planting the sites. Natural revegetation of sites generally is not



ecologically feasible and is not a standard practice accepted by the Interagency Review Team. The DEIS should specify the process for providing the Missouri Interagency Review Team with each site specific mitigation design with planting lists for review and approval. Ecological performance standards need to be developed and included in the DEIS for vegetation diversity (number of species), number of strata, and percent cover appropriate for that vegetation type based on reference information.

The EPA recommends that the DEIS provide a process for all the agencies of the Missouri Interagency Review Team to review and approve the monitoring reports (page 323). Annual Interagency Review Team mitigation site visits are recommended. The DEIS should clarify what is meant by “vegetation is established” and describe how will this be measured and what will the target be for each habitat type. That is, each site plan must include specific vegetative diversity and cover standards to determine success.

Page 330 indicates project adaptive management reports would be developed at 5, 15, 25 and 50 years. We would recommend planning for annual reporting periods in the early years during and after project construction until interim performance standards are met in order to more quickly identify and correct issues at their onset.

On page 298 the DEIS states does not define “risk register.” It is unclear what role this will have in ecological performance standards.

#### **Adaptive Management:**

The DEIS does not adequately describe the adaptive management plan and uses concepts and terms that are not standard practice for the Missouri IRT (page ii). The Mitigation Rule discusses adaptive management plans; however the DEIS is unclear what is meant by “adaptive mitigation strategy.” Page x, the DEIS recommends adaptive management to overcome any mitigation shortfalls as a result of uncertainty by utilizing future “monitoring point estimates” to determine if “adaptive management decision thresholds” have been met; but the DEIS does not describe these estimates or decision thresholds. The DEIS needs to define key terminology and provide sufficient detail to demonstrate that the adaptive management strategy sufficiently reduces risk such that the plan has a reasonable chance of success to offset impacts.

The processes for monitoring and calculating total adaptive management costs are not well documented. The document states on page ii, “In the event that future monitoring determines that there is a mitigation deficiency, operation of gates and pumps would be changed to reduce the environmental impacts of the project.” Page 333 states “Any changes to the project operation must still be economically viable.” The process and criteria for making these determinations is not described in the document and creates unacceptable risk. If the monitoring shows that the gates need to be open year round to offset impacts, will that be acceptable to project sponsors and the operation of the Mississippi River and Tributaries Project?

The DEIS does not specify what assurances would be put in place that adaptive management would be conducted according to plan. The Advance DEIS should be modified to include detailed description and logistics of the adaptive management plan and third party monitoring and oversight. For example, more information and clarity is needed at pages 13, 57-58, and 61.



Page 191, the DEIS states “Increases in rice production and the potential benefit to shorebirds would be monitored through adaptive management.” The DEIS should clarify the functions provided by rice fields, how these functions are assessed, and how potential increase or decrease in function due to project activities might be incorporated into the comprehensive mitigation plan.

The DEIS should be revised to clarify that site specific remedial actions will be necessary for each mitigation site whenever the site-specific performance criteria have not been met. On page 333 the DEIS states “Remedial actions would only be necessary when a cumulative need was lacking, not a site-specific need.” This implies that if a tract fails for one resource class, it will be counted towards another class. This is inconsistent with the requirements of the Mitigation Rule and would present extreme difficulties in tracking in-kind replacement for losses to Waters of the US.

#### **Watershed Approach:**

Page xix: the DEIS states “As seen in the proposed mitigation measures, a holistic watershed approach to compensatory mitigation has been proposed.” Based on the information provided to date, the DEIS does not represent a watershed approach as it is outlined in the Mitigation Rule (see 40 CFR 230.93(c)).

The potential conflict between goals of the Lower Mississippi River Conservation Committee and the TSP should be addressed in the watershed context for the Mississippi River (page 271). Will the TSP impact efforts to improve fish and wildlife habitat and recreational opportunities on the River? How do the proposed mitigation activities fit within other watershed planning and improvement efforts?

#### **Mitigation Costs:**

The costs of mitigation are not adequately assessed, and leave many factors undetermined. Thus the cost/benefit ratio cannot be fully determined. The DEIS should clearly outline how mitigation costs were derived and these costs should be specified when comparing alternatives (Table 2.6).

Mitigation costs are not fully accounted for in the economic analysis. The difference between property value of cropland and woodland is the only cost included in the discussion. However, once an area is set aside from mitigation its property value may be different due the requirements of the conservation easement. The costs of monitoring, maintenance, management and protection into perpetuity are not accounted for. Other types of mitigation costs beyond woodland planting are not mentioned, including: stream mitigation, borrow pit construction, wetland planting, legal fees, and engineering design for water control structures. Information is lacking on what species would be planted at sites or over how many acres. There is also no indication of seeding rate or planting spacing which could dramatically change mitigation costs. Additionally, page 333, the DEIS states “a 25% contingency has been added to the calculated cost of mitigation features.” What is this cost, and where is it documented in the DEIS? The DEIS underestimated the cost of mitigation, which would alter the cost benefit ratios for the alternatives.

It is unclear in the DEIS what mitigation costs were included in the economics assessment. In Appendix B, page 26, two figures are provided: \$40,358,000 is estimated for reforestation cost, but this section also indicates only \$16,915,000 of that cost was incorporated in the economics assessment. As a routine part of the mitigation plan review process, the EPA reviews potential mitigation costs in order to determine if a mitigation provider has fully accounted for all potential costs and to evaluate feasibility of the plan. Based on information provided in the Advance DEIS and known mitigation costs in Missouri, the EPA estimated mitigation costs for the TSP. Based on our estimate, and the absence of several types of mitigation costs in the Advance DEIS, the EPA estimates mitigation costs have been significantly underestimated.

**Ecologically Designed Borrow Pits:**

Page xx, and Page 49: the document discusses “ecologically designed borrow pits and floodplain lakes,” and page 147, Table 4.29 states that 194 acres of wetland function will be provided by borrow pits. The EPA disagrees that borrow pits will replace lost functions of area wetlands. While these may be appropriate to offset some impacts to fisheries, they are not acceptable mitigation for vegetated wetlands. The depth of the pits would provide only open water habitat because the depth of the water will not allow emergent plant growth. These areas should be removed from wetland acreage and functional assessments.

**Batture Lands:**

The EPA and other agencies have commented previously that mitigation in the batture land would not adequately compensate for wetland losses due to the TSP. This land is already connected to Mississippi River and subject to the flood pulse, and much of the area is already wetland. Therefore, mitigation in the batture will not increase functions related to the flood pulse, which is the most difficult aspect of the project to mitigate. These areas would also likely not be appropriate for preservation credits under the Mitigation Rule because they are under no threat for development.

The DEIS should clarify if batture lands have already been purchased for the purposes of mitigation of this project. If not, how has it been determined that all these lands are available for mitigation? The DEIS needs to provide more information on the current status of these lands, including, a breakdown of which lands are located in the state of Missouri. More information should be provided regarding the functional losses proposed activities in the batture are intended to replace and which regulatory requirements will be satisfied.

Page xx: the document states that batture land lakes are degraded due to the high sediment load in the Mississippi River. Would other areas of the batture also be degraded? The DEIS needs to include a discussion of the ecological feasibility and suitability of restoring these lands given these conditions.

### **Ten Mile Conservation Area and Big Oak Tree State Park**

- Use of State land (MDC Ten Mile Pond Conservation Area and Big Oak Tree State Park) as mitigation may not be compliant with 40 C.F.R. § 230.93(a)(3) because these lands are a part of “public programs already planned or in place.” Also, these lands may not meet 40 C.F.R. § 230.92(h) requirements for preservation. EPA observes that the brief citation included on page 301 to the Congressional Authorization allowing for use of Ten Mile Pond for mitigation is specific only to fish and wildlife protection. See discussion in the preliminary DEIS in Section 2.3.5.

In addition, the Water Resources Development Act of 1986 states that mitigation lands must be acquired from willing sellers. The DEIS does not detail if MDC is a willing seller or will participate in mitigation activities for these lands.

Page xix, the proposed mitigation at existing areas of 10 Mile Pond do not meet the test for preservation under the Mitigation Rule and therefore could not receive mitigation credits for CWA Section 404 compliance.

### **Big Oak Tree State Park:**

Section 1.3.2, page 5: Identifies BOTSP as a priority for mitigation. However, mitigation priorities must be generated from a comprehensive mitigation plan that includes a watershed approach for identifying the most desirable sites for restoration activities. Siting of restoration parcels has not been discussed in the context of the watershed.

The DEIS does not provide a clear description of how and by whom the park and associated mitigation lands will be managed in the future. Who will own the land and provide long term management, maintenance, and financial assurances? The mitigation plan needs to provide an agreement between the state and the USACE for management of these lands as well as everything required by the Mitigation Rule (40 CFR §230.94), including: performance standards, financial assurances, ownership, site protections, and long-term stewardship.

The DEIS describes proposed activities at BOTSP as “restoring” hydrology. However, the proposed work may be more accurately described as enhancement of hydrology. The proposed work is highly engineered and susceptible to failure or high maintenance and management costs. Some areas that are currently wetland may change class or be converted to open water if the water control structure and/or regime are operated incorrectly. Additional description and design parameters of the controlled water levels are needed to determine technical and ecological feasibility of the proposed activities.

The DEIS should clearly describe the proposed water control structure operations for BOTSP and other mitigation lands. This information cannot be deferred until the Record of Decision, as implied on page 47, as it is crucial to determining net benefit of proposed mitigation.

The EPA is a strong proponent of efforts to restore more natural hydrology to floodplain areas cut off from the Mississippi River by the Corps’ Mississippi River and Tributaries Project features. Our recent understanding from experience with similar efforts in coastal Louisiana is that such modifications to the Mississippi Mainline Levee would elicit the need for authorization

pursuant to Section 408 of the Rivers and Harbors Act. It is not clear from the DEIS whether that is the case and, if so, whether this has been addressed for purposes of this proposed mitigation feature.

#### **Adequate Compensation for Impacts to Streams Has Not Been Demonstrated**

- Proposed stream and wetlands mitigation is lacking documentation and does not address several previous comments provided by the EPA, including comments regarding technical and ecological feasibility of planned activities. Additionally, the preliminary DEIS does not appear to follow processes outlined in the Mitigation Rule or contain all the elements of a mitigation plan required under 40 CFR § 230.94(c).

The description of stream mitigation activities is incomplete and is not sufficient to determine if impacts have been adequately assessed and if proposed mitigation activities will adequately compensate for losses. Detailed maps of areas of proposed mitigation areas with type of mitigation activity are needed.

The worksheets provided in Appendix P Part 2 and 3 do not describe what each of the dominant impacts and net benefits are, or how the value for each of the factors was chosen. Additionally, it appears that not all of the impacts are accounted for in the worksheets. Adding up the linear feet in the adverse impact sheet equals 15.35 miles, however the DEIS describes on page xvi that 23.1 miles will be impacted.

The EPA and other IRT agencies have previously commented that forested buffers should be used instead of grass buffers. Grassed buffers, and any buffers placed upon spoil piles, would not be provided mitigation credits because they do not provide in-kind replacement of functional losses for the environmental setting. Additionally, any buffers that will be impacted in the future during maintenance activities would not receive mitigation credits because the Mitigation Rule requires that mitigation areas be protected in perpetuity. The document, page 34, states that areas would be allowed to revegetate naturally. The IRT requires that stream buffers be planted with the appropriate density and species composition of trees and understory plants.

The EPA provided comments outlining several factors that should be considered to determine if proposed riparian buffers are appropriate. Credit for riparian buffers on only one side of a stream is not recommended unless a net benefit can be demonstrated. The DEIS should include discussion of factors such as orientation of the buffers to provide shading, how on-going channel maintenance might impact the mitigation resource, if there are more appropriate areas in the watershed for stream mitigation, and opportunities for enhancing streams utilizing Natural Stream Channel Design.

The DEIS must clearly describe how revetment and culvert replacement activities have been included in the assessment. The EPA has previously commented that placement of hard structures in streams, such as these proposed activities, are considered to be impacts rather than enhancements and should be included in the assessment of debits; however it is unclear if these changes have been made.

Page 239: it is unclear in the DEIS how stream credits for borrow pits created near streams will be determined.

## 4. Wetlands Extent

### CWA Jurisdiction

- **The EPA notes that the preliminary DEIS contains confusing and perhaps unnecessary statements regarding Clean Water Act (CWA) jurisdiction that may prove unhelpful to the public.**
  - For example, the Advance DEIS states on page 95, “Wetlands that are potentially regulated by the Clean Water Act are indicated in Bold Calibri Font to distinguish the different wetland terminology used by others.” We recommend that language used in regard to CWA jurisdiction throughout the draft document be reviewed for clarity and revised as necessary.

Clarity could be added to the DEIS by outlining the role and responsibility of the resource agencies and clearly citing the regulations and sources of definitions. Providing the USACE Jurisdictional Determinations, as well as a discussion of normal procedures for conducting JDs and how the DEIS followed those procedures, would help clarify this issue.

In the DEIS the distinction between the definition of wetlands and the definition of Waters of the U.S. should be clarified.

To date, Jurisdictional Determinations have not been provided by USACE describing Waters of the United States in text and with maps, and the NRCS wetland determination report and methodology for farmed wetlands and prior converted cropland under the Food Security Act have not been included. This information is essential to determining impacts to Water of the US and its exclusion will also present difficulties in identifying wetlands during project implementation for the purposes of 1) avoiding impacts during construction, operation, and maintenance of project activities; and 2) placing borrow pits and other proposed activities in PCC lands. For example, the Introduction on pg xx indicates that the TSP will use 1,800 acres of PCC for restoration, but no information is provided on how these lands will be identified.

### **Wetland Reserve Program:**

Page 114-116, the methodology for determining future Wetland Reserve Program participation does not appear to have considered impacts of the TSP and likely results in an overestimate of acreage. With the TSP in place, the area would be drier, it would be more difficult to provide the appropriate hydrology to restore sites resulting in fewer acres restored, and there would be fewer economic drivers for restoring wetlands. Existing WRP sites will be degraded due to lack of water and/or altered hydrology. Has the NRCS provided an assessment on TSP impacts to WRP sites, their potential degradation over time, and how this may impact the NRCS and landowners' ability to meet program requirements?



## 5. Description of the Affected Environment

- **The Advance DEIS does not appear to adequately consider implications of the 2011 flood or future activation of the New Madrid Floodway in evaluating alternatives in Section 2.0.**

The EPA recommended in September 2011 that the DEIS include an assessment of the impacts of the 2011 activation of the floodway (on social, cultural and natural resources and infrastructure) and resulting implications on this project. Inclusion of 2011 information may lend support to the project needs statement.

However, the DEIS does not appear to include information concerning the operation of the floodway in 2011 and the potential for operating it again in the future if the project is implemented. Damages and shifts in population as a result of the 2011 floods were not described in the Sections that discuss need for action. It is not clear if alternatives were analyzed based on their ability to reduce damages in the event of activation of the floodway. Assessment of the 2011 activation of the floodway provides current information on the costs of repairs to the levee system the government will realize for rebuilding. This information should be used to determine the costs for rebuilding post-project for each alternative, including what the additional cost would be to repair two levee breaches (inlet and outlet) should the levee gap be closed.

The DEIS states that estimates regarding frequency of floodway operation are based on past frequency of operation. This may be insufficient to provide a basis for analysis of future operations due to changes in land use in the watershed and the affects of climate change. The potential for more frequent activation of the floodway does not appear to have been considered in the needs statement, impacts assessment, or economic assessment. The EPA recommends these factors be given additional consideration in the DEIS.

### **Executive Order 11988: Flood Plain Management (May 24, 1977)**

Executive Order 11988 requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

The Interagency Task Force on Floodplain Management clarified the EO with respect to development in flood plains, emphasizing the requirement for agencies to select alternative sites for projects outside the flood plains, if practicable and to develop measures to mitigate unavoidable impacts.

The EO requires federal agencies to develop measures to minimize the impacts and restore and preserve the floodplain, as appropriate. The DEIS should address:

- Will the proposed action create significant environmental impacts on communities above or below the new structure, since this is the last open floodplain on the lower basin of the Mississippi River?
- What is the expected increase in development post-project? The Introduction, Section S8 Floodplain Management, states there will be no increase in floodplain development and

no development of residential areas, but doesn't address potential redevelopment of Pinhook post 2011 flood and conflicts with the statement made on page xxiii that "Indirect impacts from this action may include residential and commercial growth within the protected area."

## **6. Flood Risk on Mississippi River and Environmental Justice Executive Order 12898 (February 11, 1994)**

- **The Advance DEIS acknowledges there will be some increases in Mississippi River elevation, but does not quantify increase in flood risk to those affected areas and communities. Additionally, the assumptions concerning river elevation are based on potentially outdated modeling (pre-1990). It is unclear if the modeling accounted for effects of proposed pumping operations or only closure of the levee gap. See Appendix C page C-18.**

According to EO 12898, Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

The document provides comment on some of the communities that will see beneficial changes with the proposed action; however, EJ communities adversely impacted by the 2011 flood are not adequately addressed. Page 257, mentions there are no environmental justice issues, however concerns have been expressed by citizens in Cairo, Hickman, Paducah, Olive Branch, Cape Girardeau, and others that this project would increase flooding in their communities. The extent of flooding increase to all communities that might be impacted due to post project changes in hydrology needs to be provided.

## **7. Use of Models**

The Advance DEIS is unclear if all the models have been officially certified. For example, Appendix H Part 2 states that results of the Shorebird model validation will not be available until November or December of 2014. Impacts to shorebird populations are expected to be significant. Will the project move forward before this and other models are validated?

The EPA observes that there are several issues or criteria identified by the Model Certification Review Report that have not been addressed:

- HGM, Volume 3 Part 6.3, page 30 lists "risks associated with its [HGM] continued use." See also page v, pages 27-29, and Appendix B pages 1-29.
- Fish, Volume 3 Part 6.1, page vi;
- Waterfowl Assessment Methodology, Volume 3 Part 6.2, pages iv-v;
- Shorebirds, Volume 3 Part 6.4, page ii and page v.

Page x: The documents states that risk and uncertainty associated with each of the models as well as future mitigation tracts have been qualitatively discussed and quantified where appropriate. Where in the document did this occur?

### **HGM Model**

Page iv states "Conservative estimates within each specific mitigation zone have been made in the DEIS to ensure that significant resources are compensated to the extent justified." Outlined below are a number of concerns with the way HGM is being used to calculate impacts.

The EPA comments from our March 8, 2010 letter to Gregg Williams have not been addressed. See PDF Page 93-105 in Volume 2 Part 2 Interagency Correspondence and Memorandums for Record.

The EPA has requested that the HGM sample points GIS layer and copies of the HGM data forms or spreadsheet of data collected at each sampling point be provided; however this information has not been provided to date. This information is needed in order to assess the conclusions of the DEIS.

The HGM functional assessment method tends to blend complex concepts making it complicated to use, and difficult to interpret the results generated. The DEIS should clearly describe for the public what the HGM results mean in terms of wetland functional impacts and how they will be mitigated.

Pg 38 (PDF page 39) Table 23: Functional Losses in FCUs Associated with the Authorized Project within the New Madrid Floodway, and a Calculation of Mitigation Acres Based on Mitigation Annualized FCIs from Table 22. There is an error in the table and text. In the last column the highlighted cell says that the highest value for CD is 431, however the cell for maintain plant communities 514 should be highlighted because it is the highest value. The description in the table also needs to be corrected.

The page also states: "It is assumed that mitigation is taking place within the 5-year floodplain, in large (1200 acre) well-connected tracts, but that no structure has been installed to restore flooding. Thus, the mitigation is maturing while subject to the altered hydrology associated with the Authorized Project. This leads to a much smaller functional lift per acre (or Annualized FCI), and larger acreage requirements for mitigation to offset the losses associated with the project." The mitigation amount should be increased to take into account the loss of hydrology within the project area.

Standard practice of the Missouri IRT is to require 10:1 mitigation ratio for preservation and a 2:1 ratio for enhancement activities. Any HGM FCU calculations need to take this into account. Preserved areas function units should be reduced by a factor of 10, and any enhancement areas function units need to be reduced by half. When taking this into account the project is lacking mitigation, and recalculations to mitigation need and the cost benefit analysis need to occur.

HGM calculations for removing the flood pulse could not be found in the document but should be calculated. The number of acres that no longer have the detain floodwater function should be quantified and added to the mitigation needs.

The Corps has limited the area of impact to investigate in the DEIS; however, the statement on Volume 3 Part 6.3, pages 14-15, supports the need to expand calculation of impacts to a larger area to take into account extreme events.

Pages B-5 through B-6 of Volume 3 Part 6.3 state that HGM does not adequately assess variables of flood duration and frequency in order to track changes in wetland condition. Considering that flooding extent and duration are crucial variables for evaluating impacts and proposed compensatory mitigation for this project, HGM is not appropriate.

Memorandum For Record

23 June 2013

Subject: Interagency Comments and Responses from the January 2013 Advanced Copy of the Draft St. Johns Bayou and New Madrid Floodway Environmental Impact Statement

1. An advanced copy of the DEIS was transmitted to the EPA and Fish and Wildlife Service on 3 January 2013.
2. The Fish and Wildlife Service provided comments on 18 January 2013.
3. EPA provided comments on 20 March 2013.
4. The overall response letters were divided into specific comments and grouped by theme. Responses to each of the individual comments are provided in the attachment. Applicable revisions were made to the DEIS.

Respectfully submitted,

Daniel Ward, Project Manager

(Attachment)



| Organization | Unique Identifier** | Theme(s)         | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|------------------|---|---|
| EPA          | EPA-1               | Purpose and Need | Justification for the project is inadequate in the "Purpose and Need for Project" section.  | The purpose and need section has been revised to clarify the project's justification.                                     |
| EPA          | EPA-2               | Purpose and Need | The Advance DEIS does not provide a clearly defined purpose and need for the project beyond "flood risk management."  | Section 1 has been revised clarifying the purpose and need for the project and its authorization regarding flood control. |
| EPA          | EPA-3               | Purpose and Need | Previous comments provided in September 2011 included the following: The EPA appreciates the acknowledgement that since the time of project inception, national and Corps policy has transitioned from "flood control" to "flood risk reduction." | Comment noted.  |
| EPA          | EPA-4               | Purpose and Need | Concurrent with this policy transition (flood control to flood risk reduction), environmental restoration has also become a priority mission of the Corps.  | Neither the 1954 Act nor the 1986 Act include ecosystem restoration as a project purpose.                                 |
| EPA          | EPA-5               | Purpose and Need | This evolution in policy (flood control to flood risk reduction) should compel precision and exactness in describing public safety, property, infrastructure, activity, etc. that needs to be afforded flood risk reduction, and to what degree.  | Section 1 has been revised to clarify (see Footnote 1).   |
| EPA          | EPA-6               | Purpose and Need | The evolution in policy (flood control to flood risk reduction) should compel precision and exactness in describing the project's implications on environmental restoration of the St. Johns and New Madrid basins.                               | Section 1 has been revised to clarify (see Footnote 1).   |
| EPA          | EPA-7               | Purpose and Need | The basic project purpose is unclear.   | Section 1 has been revised clarifying the purpose and need for the project.   |

| Organization | Unique Identifier** | Theme(s)         | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|------------------|---|--|
| EPA          | EPA-8               | Purpose and Need | The stated project purpose in Sections S2 Project Purpose and Need, page xii and 1.1 Project Purpose, page 1, is flood risk management. These sections do not include economic growth or agricultural intensification as the basic project purpose, but the document discusses these interests elsewhere as objectives for the project (Project Specific Objectives in Section 1.3.2, the Federal Objective in Section 2.1, and Principles and Guidelines in Section 2.4) | Section 1 has been revised clarifying the purpose and need for the project.  |
| EPA          | EPA-9               | Purpose and Need | These interests (economic growth and agricultural intensification) must be included in the basic project purpose if they are to be used to evaluate alternatives.   | Section 1 has been revised clarifying the purpose and need for the project.  |
| EPA          | EPA-10              | Purpose and Need | It is only the basic project purpose for which alternatives can be evaluated per the Clean Water Act Section 404 (40 CFR 230.10(a)).  | Section 1 has been revised clarifying the purpose and need for the project and its authorization regarding flood control. Section 2 has been revised clarifying the range of alternatives and screening process. |
| EPA          | EPA-11              | Purpose and Need | Evaluation of alternatives against interests not specified in the basic project purpose is not in compliance with regulations.  | Section 1 has been revised clarifying the purpose and need for the project and its authorization regarding flood control. Section 2 has been revised clarifying the range of alternatives and screening process. |
| EPA          | EPA-12              | Purpose and Need | The EPA recommends the DEIS be revised to clearly state the basic project purpose and describe the "Project Specific Objectives" and other interests in the appropriate context.  | Section 1 has been revised clarifying the purpose and need for the project.  |
| EPA          | EPA-13              | Objectives       | Some of these factors (Project Specific Objectives) may be better described as benefits of the proposed action, such as social well being and economic development.   | Project specific objectives and constraints were clarified in the revised DEIS. See section 1.   |

| Organization | Unique Identifier** | Theme(s)         | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|------------------|---|--|
| EPA          | EPA-14              | Objectives       | Others (Project Specific Objectives) are mandated by law, such as compensation for unavoidable impacts.   | Project specific objectives and constraints were clarified in the revised DEIS. See section 1.   |
| EPA          | EPA-15              | Objectives       | Recognizing the importance of the flood pulse is a stated objective; but this is a resource function that should be a major component of evaluating impacts of each alternative in the environmental impact analysis. | This has been revised to a constraint. See Section 1.  |
| EPA          | EPA-16              | Objectives       | Restoration of Big Oak Tree State Park is a potential compensatory mitigation strategy and does not belong in the discussion of purpose and need or alternatives.   | Although restoration of Big Oak Tree State Park remains a mitigation priority, it has been deleted as a project specific objective.  |
| EPA          | EPA-17              | Objectives       | The Federal Objective is a factor in determining project feasibility.   | The purpose and need section has been revised to clarify project purpose, objectives, and constraints.   |
| EPA          | EPA-18              | Objectives       | Each of these interests (flood pulse, BOTSP, Federal Objective) should be considered and discussed in the appropriate context and section of the DEIS.  | The purpose and need section has been revised with these interests considered and discussed in other appropriate sections of the report.   |
| EPA          | EPA-19              | Editorial        | Within Section 2.1 Preliminary Alternatives, phrasing of one of the Project Specific Objectives changes from "manage flood risks for social well being" to "manage flood pulse for social well being."                | Section 2 of the DEIS has been revised to clarify criteria (objectives and constraints), preliminary alternatives, the screening process, and alternatives considered for detailed analysis. |
| EPA          | EPA-20              | Editorial        | Reducing flood risk and damages can be quite different from managing the flood pulse.   | Sections 1 and 2 of the DEIS has been clarified with additional discussion of flood control and flood risk management as well as clarification of project objectives.                        |
| EPA          | EPA-21              | Editorial        | In addition, "managing" the flood pulse contradicts the objective to "recognize the importance of the flood pulse."   | Sections 1 and 2 of the DEIS has been clarified with additional discussion of flood control and flood risk management as well as clarification of project objectives.                        |
| EPA          | EPA-22              | Purpose and Need | Need for action has not been adequately demonstrated.   | Section 1 has been revised clarifying the purpose and need for the project.  |

| Organization | Unique Identifier** | Theme(s)         | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|------------------|---|--|
| EPA          | EPA-23              | Purpose and Need | The discussion in Sections S2 Project Purpose and Need and 1.2 Need for Action does not provide precision and exactness in describing the public safety, property, infrastructure, activity, etc. that needs to be afforded flood risk reduction, and to what degree. | Section 1 and the Executive Summary have been revised clarifying the purpose and need for the project.                                     |
| EPA          | EPA-24              | Purpose and Need | Maps, tables, and other description of the populations affected by flooding, the frequency of isolation, and the associated costs should be provided.   | Section 1 has been revised with additional flooding data.  |
| EPA          | EPA-25              | Purpose and Need | Similarly, the exact location, frequency, duration, and damages of public infrastructure should be described.   | Section 1 has been revised with additional flooding data.  |
| EPA          | EPA-26              | Purpose and Need | The need of the project should be based on an actual goal for reduction of these damages (costs of flooding).   | Section 1 has been revised with additional flooding data and results of economic modeling.   |
| EPA          | EPA-27              | Purpose and Need | While the document appears to have fully considered agricultural damages and the potential benefits of agricultural intensification, the facts and figures pertaining to public safety, property, infrastructure, etc. are not included.                              | Section 1 has been revised with additional socio-economic discussion.  |
| EPA          | EPA-28              | Editorial        | The document states that the flooding problems of East Prairie are not due to impounded interior runoff (pg 19), and Section 1.2 page 3 states that "the project would not entirely alleviate all of the city's flooding and drainage problems."                      | Section 2 has been revised clarifying flood conditions in and around East Prairie as well as remaining areas in the St. Johns Bayou Basin. |
| EPA          | EPA-29              | Alternatives     | No alternatives have been developed with the express purpose of addressing these drainage problems for East Prairie.  | Section 2 has been revised clarifying that East Prairie requires channel modifications and a pump station.                                 |

| Organization | Unique Identifier** | Theme(s)         | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|------------------|---|---|
| EPA          | EPA-30              | 2011 Flood       | The document does not provide essential information regarding the repopulation of the New Madrid Floodway post 2011 activation.   | Visual observations indicate that much of the agricultural land within the floodway (75 to >90%) was replanted with crops within a few months following activation. Although there is no formal survey to date, observations also indicate residents are continuing to repopulate the floodway. It is anticipated that with time and the infrequency of Floodway operation, more residents would return. The DEIS has been revised to better describe this issue. |
| EPA          | EPA-31              | Alternatives     | On page 28 the document states that the Village of Pinhook has expressed a desire to relocate, but relocation of these residents is being considered outside of this project.   | noted   |
| EPA          | EPA-32              | Purpose and Need | The document must clearly articulate the degree of flood risk reduction needed for public safety and infrastructure and evaluate alternatives against that measure.   | Section 1 has been revised with additional socio-economic discussion.   |
| EPA          | EPA-33              | Purpose and Need | The need for action is not clearly presented in the document.   | Section 1 has been revised clarifying the purpose and need for the project.   |
| EPA          | EPA-34              | General          | The abstract, page I that states, "The flood pulse is no longer the driving force in the St. Johns Bayou and New Madrid Floodway project area. The annual disturbance associated with farming (e.g., disking, plowing, land leveling, herbicide application, etc.) is the current principle driving force that limits ecological productivity and habitat." This statement is not supported by scientific evidence and negates the need for flood management. | The DEIS has been revised to clarify the conclusions in the abstract about the current degraded condition of the project area.  |



| Organization | Unique Identifier** | Theme(s)         | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|------------------|---|--|
| EPA          | EPA-35              | Purpose and Need | Page 121 states "current conditions show that farming is very profitable and would likely remain so under future without-project conditions." This fact calls into question the concept presented in the Advance DEIS that meeting the needs for social well being is dependent on increasing economic benefits to agricultural areas | The DEIS has been clarified.   |
| EPA          | EPA-36              | Purpose and Need | Section 1.2, page 2, states that flooding adjacent agricultural land is an impediment to the areas future prosperity; however specific information regarding flood damages and the effects on the local economy are not provided.   | Economic benefits were determined for the national economic development account, not the local.  |
| EPA          | EPA-37              | Purpose and Need | The document lacks an adequate description of the needs of the proposed action and without maps and clear language in the executive summary, introduction, and purpose and need statement may not engage the public and decision makers in a call to action.  | The Executive Summary and Section 1 has been revised clarifying the purpose and need for the project.  |
| EPA          | EPA-38              | TSP              | It is unclear that the Advance DEIS adequately demonstrates to the public that the Tentatively Selected Plan (TSP) complies with the Clean Water Act 404(b)(1) Guidelines (Guidelines).   | The 404(b)(1) evaluation has been revised to clarify this concern.   |
| EPA          | EPA-39              | TSP              | Full range of alternatives and selection of the least environmentally damaging practicable alternative has not been adequately demonstrated.  | The purpose and need sections as well as the alternatives section have been revised to help clarify the scope of practicable alternatives. The 404(b)(1) analysis has been revised to discuss LEDPA. While the TSP represents the "tentatively selected plan", it does not represent the final selection of the agency, which will be documented in the ROD. |

| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|--------------|---|--|
| EPA          | EPA-40              | TSP          | It is unclear that the Advance DEIS demonstrates the TSP represents the least environmentally damaging practicable alternative, consistent with 40 CFR Part 230.10(a).  | The purpose and need sections as well as the alternatives section have been revised to help clarify the scope of practicable alternatives. The 404(b)(1) analysis has been revised to discuss LEDPA. While the TSP represents the "tentatively selected plan", it does not represent the final selection of the agency, which will be documented in the ROD. |
| EPA          | EPA-41              | Alternatives | Section 2.1 indicates that several structural alternatives for the New Madrid Floodway portion of the project now appear to have been eliminated from further consideration without presenting to the public the current analysis supporting such a decision.   | The DEIS has been revised to provide additional documentation regarding alternative screening criteria.  |
| EPA          | EPA-42              | 404b1        | The evaluation of practicable alternatives which would have less adverse impacts on the aquatic ecosystem, as presented in the Section 404(b)(1) Evaluation Report (Appendix E Part 7 of the DEIS) consists of one sentence, "Alternative to avoid and minimize project impacts has been selected as part of the Recommended Plan." | Section 404(b)(1) Report has been revised to clarify the evaluation of alternatives.   |
| EPA          | EPA-43              | 404b1        | 40 CFR § 230.10(a) prohibits the discharge of dredge or fill material if there is a less environmentally damaging practicable alternative to the proposed discharge.  | The Section 404(b)(1) evaluation has been revised to include additional documentation regarding the discharge of fill material and additional discussion regarding the least environmentally damaging practicable alternative in consideration of cost, existing technology, and logistics in light of the project purpose..                                 |

| Organization | Unique Identifier** | Theme(s)         | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|------------------|---|---|
| EPA          | EPA-44              | 404b1            | The level of detail of the alternatives analysis and the assessment of impacts is insufficient given the complexity of issues, scale of the project, and the potential severity and magnitude of adverse impacts to the aquatic ecosystems (see also the 1993 Memorandum to the Field, <i>Memorandum: Appropriate Level of Analysis Required for Evaluating Compliance with the Section 404(b)(1) Guidelines Alternatives Requirements</i> ). | Section 404(b)(1) Report has been revised to include the level of detail that demonstrates the alternatives analysis and impact assessments are commensurate with the complexity, scale and magnitude of impacts. |
| EPA          | EPA-45              | General          | The DEIS does not adequately support the position that the project is water dependent.  | The project's purpose is to manage flood risks based upon the project's authorization. The DEIS and 404(b)(1) has been clarified to discuss the water dependency of the project.                                  |
| EPA          | EPA-46              | Purpose and Need | A more clearly defined project purpose will facilitate the analysis of water dependency under the CWA Section 404(b)(1) Guidelines.   | Section 1 and the 404(b)(1) has been revised clarifying the purpose and need and the water dependency determination.  |
| EPA          | EPA-47              | 404b1            | In accordance with the Guidelines "practicable alternatives that do not involve special aquatic sites [e.g. wetlands, riffle/pool complexes] are presumed to be available, unless clearly demonstrated otherwise.   | Section 404(b)(1) Report and Section 2 of the DEIS have been revised to include a discussion on practicability determinations of various project alternatives.  |
| EPA          | EPA-48              | 404b1            | Where a discharge is proposed for a special aquatic site, all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise" (40 CFR 230.10(a)(3)).  | Section 404(b)(1) Report and Section 2 of the DEIS have been revised to include a discussion on practicability determinations of various project alternatives.  |

| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|--------------|--|---|
| EPA          | EPA-49              | Alternatives | The document lists a range of potential actions but does not demonstrate consideration of the full range of practicable alternatives.  | The DEIS has been revised to provide additional documentation regarding alternative screening criteria.   |
| EPA          | EPA-50              | Alternatives | The alternatives analysis appears to narrowly focus on one activity at a time to determine the ability of an activity to meet project objectives, rather than combining activities to generate a meaningful range of alternatives.   | The DEIS has been revised to include an analysis of standalone preliminary alternatives as well as a combination of preliminary alternatives.   |
| EPA          | EPA-51              | Alternatives | Alternatives that combine multiple non-structural approaches, or both structural and non-structural approaches, should be considered.  | The DEIS has been revised to include an analysis of a combination of preliminary alternatives.  |
| EPA          | EPA-52              | Alternatives | Alternatives that combine multiple non-structural approaches should be re-examined and carried through a full analysis of their environmental impacts and compared to each other in order to allow for a fully-informed decision on how to best meet the projects basic purpose. | The DEIS has been revised to include an analysis of a combination of preliminary alternatives. However, a combination of non-structural preliminary alternatives were not carried forward for detailed analysis for reasons stated in the DEIS. The DEIS has been revised to explain the screening process. |
| EPA          | EPA-53              | Alternatives | Considering activities individually as standalone alternatives for both NMF and SJB basins combined, rather than separately for each basin, presents unnecessary obstacles in the evaluation.  | The DEIS has been revised to discuss problems and solutions to flood problems separately for each basin.  |
| EPA          | EPA-54              | General      | The environmental factors, including those influencing flooding, are not the same for the two basins; therefore, evaluation of the feasibility and impacts of each alternative should be evaluated separately.   | The DEIS has been revised to describe flooding problems separately for each basin. Likewise, impacts were assessed separately for each basin. Lastly, mitigation is proposed for each basin.  |

| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|--------------|--|---|
| EPA          | EPA-55              | Alternatives | The activity of relocation was discussed in Section 2.1.4.5, pages 28-29, as a standalone alternative for both basins. The populations of the basins are not similar, and the flood risks for communities are not due to the same factors.                           | The DEIS has been revised to discuss problems and solutions to flood problems separately for each basin.  |
| EPA          | EPA-56              | Alternatives | Pinhook residents in the NMF must live with the constant risk of Floodway activation, and according to the document, have expressed interest in relocation since the 2011 Floodway activation.   | The DEIS has been revised to discuss Pinhook, repopulation of the Floodway, and the desire for a buyout.  |
| EPA          | EPA-57              | Alternatives | The discussion states that "relocation of the community [Pinhook] is being considered independently of this project or USACE." Evaluation of relocation of Pinhook is both essential as an alternative for the NMF as well as to establish the need for the project. | Purpose and Need of the project have been clarified in Section 1. Section 2 has been revised with additional information regarding the alternative screening process. |
| EPA          | EPA-58              | Alternatives | The discussion regarding the alternative of raising road surfaces would also benefit from a basin-specific evaluation.   | The DEIS has been revised to discuss problems and solutions to flood problems separately for each basin, including raising surface elevations of roads.               |
| EPA          | EPA-59              | Alternatives | The DEIS does not address whether there are key roads/corridors that could be raised to eliminate problems of community isolation.   | The DEIS has been revised to discuss problems and solutions to flood problems separately for each basin, including raising surface elevations of roads.               |
| EPA          | EPA-60              | Alternatives | Examining this alternative (raising road surfaces) independently for the each basin would generate additional alternatives and/or identify avoidance and minimization measures.  | The DEIS has been revised to discuss problems and solutions to flood problems separately for each basin, including raising surface elevations of roads.               |
| EPA          | EPA-61              | Alternatives | By evaluating raising road surfaces as a standalone alternative, the effects of potential relocation of Pinhook were not considered in the analysis.   | The DEIS has been revised with additional analysis regarding raising road surfaces. Relocation of Pinhook is not being considered for this project.                   |



| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|--------------|--|--|
| EPA          | EPA-62              | Alternatives | An alternative that allows flooding up to approximately 296.4 feet in the St. Johns Basin should be developed. At this elevation Interstate 55 could remain open.  | Although such an alternative may keep traffic and commerce on I-55 moving, it would still isolate roads leading to I-55 from East Prairie. Likewise, this alternative would not reduce agricultural flood damages. Therefore, it is not practicable. |
| EPA          | EPA-63              | Alternatives | Other examples include the Refuge/Conservation Area alternative in Section 2.1.4.1, page 23, which was considered as a "standalone" alternative. However, it may be more reasonable to consider this activity in combination with other activities, such as community relocations, elevation of roadways, and silviculture | The DEIS has been revised to combine preliminary stand alone alternatives.   |
| EPA          | EPA-64              | Alternatives | Different sizes of refuges could also be evaluated.  | Two different refuge sizes were considered. The DEIS has been revised to include additional clarification on why refuges were not considered for detailed analysis.  |
| EPA          | EPA-65              | Alternatives | Additionally, consideration of a Refuge alternative to resolve issues for both the St. Johns and the New Madrid Floodway basins creates unnecessary difficulties in the analysis.  | Refuges were considered in each individual basin. The DEIS has been clarified.   |
| EPA          | EPA-66              | Alternatives | The refuge activity should be fully considered for the New Madrid Floodway basin in combination with other activities that may address issues in the St. Johns basin.  | The DEIS has been revised by combining refuges with other preliminary alternatives.  |
| EPA          | EPA-67              | Alternatives | Similarly, the activities of silviculture and conversion to flood-tolerant crops (Sections 2.1.4.2 pages 23-24 and 2.1.4.3 pages 24-25, respectively) were considered as standalone alternatives and should be considered in combination with other activities.  | The DEIS has been revised to combine preliminary stand alone alternatives.   |

| Organization | Unique Identifier** | Theme(s)         | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|------------------|---|--|
| EPA          | EPA-68              | Purpose and Need | The DEIS should provide a clear explanation of what is meant by "net economic development" and how alternatives were analyzed in terms of meeting this objective.   | Section 2 has been revised regarding Net Economic Development and the screening process.   |
| EPA          | EPA-69              | Alternatives     | A recurring theme of the document is that elimination of alternatives appears to be based on economic justification rather than an evaluation of impacts and practicability (examples: levee alignments, refuge/conservation area, agriculture to silviculture, elevation of road surfaces, relocations). | The DEIS has been revised with additional clarification regarding the screening process undertaken for different flood risk management alternatives. Cost is a consideration in defining practicability. |
| EPA          | EPA-70              | Alternatives     | The Guidelines state that practicable alternatives are those that are "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes" (40 CFR 230.10(a)(2)).  | The DEIS has been clarified with additional discussion regarding practicable alternatives.   |
| EPA          | EPA-71              | Alternatives     | The 1993 Memorandum to the Field further clarifies that "the determination of what constitutes an unreasonable expense should generally consider whether the projected cost is substantially greater than the costs normally associated with the particular type of project."                             | The DEIS has been revised with additional clarification regarding the screening process.   |
| EPA          | EPA-72              | Alternatives     | The practicality of the activities/alternatives should be screened against each other and normal or average costs for flood risk reduction, rather than potential economic benefits of the alternatives.  | Measures and alternatives were screened against each other. The DEIS has been revised to include additional information regarding the screening process.   |

| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|--------------|---|--|
| EPA          | EPA-73              | Alternatives | Further, the alternatives analysis should include a breakdown of all known costs for each activity/alternative as a basis for comparison and evaluation of practicability.  | The DEIS has been revised to include the project cost estimates.   |
| EPA          | EPA-74              | Alternatives | The tables in the DEIS that compare alternatives are lacking the full range of alternatives and their associated impacts.   | Preliminary alternatives underwent a screening process. The DEIS has been revised to provide additional information regarding the screening process.   |
| EPA          | EPA-75              | Alternatives | Table 2.3, page 31, is insufficient for comparison and screening of alternatives: All preliminary activities/alternatives are not included in the table.  | Only those alternatives carried into detailed analysis are presented. Preliminary alternatives that were not practicable were not carried forward. The DEIS has been revised to explain the screening process. |
| EPA          | EPA-76              | Alternatives | Table 2.3, page 31, is insufficient for comparison and screening of alternatives: Environmental impacts of each activity/alternative are not provided.  | DEIS has been revised to provide additional explanation regarding the screening process.   |
| EPA          | EPA-77              | Alternatives | Table 2.3, page 31, is insufficient for comparison and screening of alternatives: Inclusion of measures to avoid and minimize impacts is out of place as this is a requirement of the CW A Section 404(b)(1) Guidelines, not an alternative, and should be specified for the overall project and each activity/alternative. | The DEIS and 404(b)(1) has been revised to include additional discussion of avoid and minimize measures.   |
| EPA          | EPA-78              | Alternatives | Table 2.8, page 57, does not include Alternative 1- No Action in the comparison, except indirectly as the baseline for FCUs.  | The purpose of the table is to compare different construction alternatives.  |
| EPA          | EPA-79              | Alternatives | We recommend more closely examining an alternative that would limit work to the St. Johns Basin.  | Comment noted. A St. Johns Bayou only alternative is presented in the DEIS.  |

| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|--------------|---|--|
| EPA          | EPA-80              | Alternatives | We also recommend that alternatives that examine different alignments for the levee closure in the Floodway be examined to determine if there are other alignments that would reduce environmental impacts and provide opportunities for environmental restoration as well as needed flood damage reduction.  | The DEIS has been revised clarifying the screening process for practicable alternatives in regards to the purpose and need for the project.  |
| EPA          | EPA-81              | Alternatives | Evaluation of alternative levee alignments should be updated from past analyses (much of this appears to date from the 1980s) and should include the direct and indirect impacts, benefits and costs associated with each of these alternatives.  | The DEIS has been revised to provide additional documentation on why alternate levee alignment were not retained for detail analysis.  |
| EPA          | EPA-82              | General      | Discussions of compensatory mitigation are included throughout the document rather than in the appropriate sequencing process of avoid, minimize, then mitigate, according the CW A 404(b)(1) Guidelines.   | The DEIS and Section 404(b)(1) Report have been revised to discuss how alternatives were formulated, impacts minimized, and impacts compensated.   |
| EPA          | EPA-83              | General      | The mitigation discussion in Section 2.3, pages 43-51, is within Section 2.0 Alternatives Including the Proposed Action. However, this section does not provide a comprehensive discussion demonstrating that all potential avoidance and minimization measures have been included in the assessment, as required by the CWA Section 404 {b)(1) Guidelines. | Section 2 has been revised. Impacts of each alternative are described in detail in Section 4. Compensatory mitigation is discussed in Section 5. Avoid and minimize measures are discussed throughout the DEIS and the 404(b)(1) analysis. |

| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|--------------|--|---|
| EPA          | EPA-84              | Alternatives | Avoid and minimize measures are only discussed for channel construction access and pump operation activities, but other potential avoidance and minimization measures are not provided (such as placing dredged material from ditches in uplands).     | Avoid and minimize measures place spoil material in prior converted cropland to the extent practical.   |
| EPA          | EPA-85              | 404b1        | The 1993 Memorandum to the Field states "it is not appropriate to consider compensatory mitigation in determining whether a proposed discharge will cause only minor impacts for purposes of the alternatives analysis required by Section 230.10(a)." | Section 404(b)(1) Report has been revised. The proposed disposal of dredged material would not likely result in significant adverse effects on human health or welfare, municipal or private water supplies, recreational or commercial fishing, plankton, fish, shellfish, wildlife, or special aquatic sites. |
| EPA          | EPA-86              | General      | In comparing the alternatives in Table 2.8, page 57, it is unclear how mitigation may be reflected in these numbers.   | Mitigation cost is included in total first costs. A footnote has been provided.   |
| EPA          | EPA-87              | Wetlands     | Comparison of FCUs is more applicable in the context of indirect impacts and mitigation planning and should not be used in lieu of a direct comparison of wetland acres and linear feet of streams impacted in the alternatives analysis.              | USACE civil works policy permits mitigation based on the replacement lost function, not ratios, when an accepted model such as the HGM model is used. This is consistent with the mitigation rule 33 CFR 332.2(f).  |
| EPA          | EPA-88              | Alternatives | The document does not define the needed flood risk reduction for East Prairie or provide information regarding the degree of protection afforded by each alternative.  | The DEIS has been revised to include additional information regarding the degree of protection for each preliminary alternative.  |



| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|--------------|--|--|
| EPA          | EPA-89              | Editorial    | Page 19 states flooding in East Prairie "is not necessarily due to impounded interior runoff," yet a few sentences later indicates "flood problems associated with impounded interior runoff can affect flooding conditions in East Prairie." The document would benefit from addressing this discrepancy, and clearly explaining the causes(s) of flooding in East Prairie to aid in assessing alternatives to attenuate this flooding. | The DEIS has been revised to clarify flood conditions in and around East Prairie as well as remaining areas in the St. Johns Bayou Basin.  |
| EPA          | EPA-90              | Alternatives | Some alternatives appear to have been dismissed based without providing a clear post-project assessment of direct, secondary, and cumulative impacts.  | The DEIS has been revised to include additional documentation regarding screening of alternatives and an explanation on why they have been dismissed.  |
| EPA          | EPA-91              | Alternatives | The discussion of conversion to silviculture and flood-tolerant crops in Sections 2.1.4.2 and 2.1.4.3, respectively, appear to have been dismissed largely on the assumption that since farmers haven't already converted to these crops, they will never convert.   | The DEIS has been revised to include additional explanation and analysis on why conversion to silviculture was not retained for detailed analysis.   |
| EPA          | EPA-92              | Alternatives | These alternatives were also considered to provide only temporary flood risk management. However, this concept of permanent versus temporary flood risk reduction was not discussed for other alternatives.  | The DEIS has been revised to clarify that existing programs would only provide temporary protection. Therefore, the preliminary alternatives were modified to provide a restricted easement in perpetuity. |
| EPA          | EPA-93              | Alternatives | Any alternative that includes engineering structures or requires continued operation and maintenance could be considered temporary.  | Comment noted.   |
| EPA          | EPA-94              | Alternatives | Analysis and consideration of all potential impacts has not been adequately demonstrated.  | Impacts have been considered and discussed throughout the DEIS.  |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|----------|--|---|
| EPA          | EPA-95              | General  | The Advance DEIS lacks a clear articulation of the secondary effects of the proposed project would be on the aquatic ecosystem in terms of altered hydrology, e.g., timing, extent, frequency, duration and depth of inundation and/or saturation. | Appendix C provides information regarding changes to hydrology including the timing, extent, frequency, duration, and depth of flooding. Hydrographs for each year over the period of record from 1943-2009 are provided to document the changes in hydrology as a result of each alternative. The impact of these changes to aquatic ecosystems are discussed throughout the DEIS. |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|----------|---|--|
| EPA          | EPA-96              | Wetlands | The draft document appears to limit evaluation of wetland impacts to only those resources within the current 5-year floodplain. Without a detailed explanation of what the actual hydrologic effects would be, it is difficult to determine whether this limitation is appropriate. | <p>See EPA 118 for a discussion regarding the utilization of the five-year flood frequency. Actual hydrologic effects are presented in Table 4.3 (Section 4.4.1). Detailed explanation is found in Appendix C, which states: "St. Johns Bayou water surface elevations are affected by existing and authorized project conditions. Project elevations may be higher during December and January due to intentional flooding of the interior; late winter and spring elevations are lowered for agricultural requirements; summer and fall elevations are only slightly lower than existing conditions. The results of the St. Johns Bayou sump analysis are presented graphically in Plates 3-72. Plates 3-70 present yearly plots (1942-2009) of existing and authorized project conditions for interior pool water surface elevations. Plate 71 presents a 365-day plot of interior pool elevation maxima, means, medians, and minima for the simulation period under existing conditions. Plate 72 presents a 365-day plot of interior pool elevation maxima, means, medians, and minima for the simulation period under authorized project conditions. New Madrid Floodway water surface elevations are affected by existing, authorized, alternative 3.1, alternative 3.2, and alternative 4 project conditions. The results of the New Madrid Floodway analysis are presented graphically in Plates 73-145. Plates 73-140 present yearly plots (1942-2009) of existing, authorized project, and alternative project conditions for interior pool water surface elevations. Plate 141 presents a 365-day plot of interior pool elevation maxima, means, medians, and minima for the simulation period under existing conditions. Plate 142, Plate 143, Plate 144, and Plate 145 present 365-day plots of interior pool elevation maxima, means, medians, and minima for the simulation period for the authorized project, alternative 3.1, alternative 3.2, and alternative 4, respectively."</p> |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|----------|---|--|
| EPA          | EPA-97              | General  | We note in Appendix B: Economics of Alternatives that it appears benefits attributed to proposed project features extend to areas beyond the 5-year floodplain. It is unclear why the scope of analysis for analyzing project impacts would be different than that used for analyzing benefits.   | The primary impact area (PIA) for each resource analyzed was based on the ecological or economic characteristics of the resource and the potential affect of the project could have on those characteristics. For example, the five-year flood frequency elevation was used to differentiate between riverine wetlands and flats (Klimas et al, 2009). Therefore, the five year floodplain served as the PIA for wetland analysis. Additionally, the five-year frequency elevation was used as the upper limit of suitable spawning and rearing fish habitat (J. Jackson, personal communication) for Mississippi River fishes. However, seasonally inundated habitat is exploited by waterfowl and shorebirds regardless of flood frequency as long as it occurs during the appropriate migration windows and is of appropriate depths (Battelle, 2010). Therefore, the upper limit for shorebirds was the maximum observed stage, and the corresponding limit for waterfowl was the 100-year flood frequency elevation. Likewise, economic benefits occur and were assessed at elevations greater than the 5-year flood frequency. Further information regarding the PIA for each significant resource can be found in the relevant section of the DEIS. Revisions have been made to the DEIS with additional citations. |
| EPA          | EPA-98              | General  | The Section 404(b)(1) Evaluation Report contained in Appendix E Part 7 asserts that there are "no significant adverse effects expected" through completion of the project. This assertion is unsubstantiated in the Advance DEIS.   | The Section 404(b)(1) analysis was revised to clarify and further document the supporting data and discussion.   |
| EPA          | EPA-99              | General  | The document does not clearly describe how impacts were calculated, or provide an estimate and comparison of direct, secondary and cumulative impacts for all alternatives.   | Discussion on how impacts were quantified for each particular resource is found in Section 4.  |
| EPA          | EPA-100             | 404b1    | Discussion of significant degradation of Waters of the United States is not provided to support the conclusions of "no significant adverse effect" under the Evaluation of Extent of Degradation of the Waters of the United States in Appendix E, Part 7 Section 404(b)(1) Evaluation Report and demonstrate compliance with the requirements of 40 CFR 230.10(c). | Section 404(b)(1) Report has been revised.   |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|----------|---|---|
| EPA          | EPA-101             | 404b1    | The burden of proof to demonstrate compliance with the CWA Section 404 Guidelines rests with the applicant of the project (40 CFR 230.12(a)(3)(iv)).                                    | Section 404(b)(1) Report has been revised to demonstrate compliance of the tentatively selected plan.   |
| EPA          | EPA-102             | General  | The DEIS does not clearly define direct impacts of the proposed alternatives.   | The DEIS has been revised to clarify the direct impacts attributed to channel enlargement and fill operations and the indirect impacts attributed to changes to hydrology.  |
| EPA          | EPA-103             | Wetlands | Assessment of direct impacts appears to have been combined with assessment of indirect impacts in the hydrogeomorphic model. This is inconsistent with USACE and EPA national practice. | Direct and indirect impacts have been addressed independently by the HGM model. A summary of direct and indirect impacts to each specific function within each wetland subclass can be found in Appendix E, Part 6.   |
| EPA          | EPA-104             | Wetlands | Section 4.8.1, page 127, states "the HGM is considered the best tool available to quantify <i>indirect</i> impacts associated with the project" [emphasis added].                       | Section 4.8.1 does state that the HGM is considered the best tool available to quantify indirect impacts associated with the project (Battelle 2010) and was used in lieu of any less rigorous methods that are not intended to represent an exact or statistically proven scientific method. This is critical due to the fact that a majority of wetland impacts associated with the project are indirect impacts. As noted in Section 4.8.1., direct impacts to wetlands in the New Madrid Floodway total only 9 acres, however, changes in both flood frequency and flood duration would affect multiple functions. In addition to functional decreases within subclasses, the hydrologic changes associated with this alternative would be significant enough to cause changes in wetland subclass from riverine subclasses [e.g., LGRB, connected depressions (CD)] to flats or unconnected depressions (UCD). |
| EPA          | EPA-105             | General  | Figures for direct, indirect or secondary, and cumulative impacts should be provided separately for each resource and discussed clearly and early in the document.                      | The DEIS has been revised. Impacts for each alternative are described in Section 4.   |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|----------|---|---|
| EPA          | EPA-106             | General  | Tables provided in the Introduction and Section 2 Alternatives Including the Proposed Action do not provide detailed figures of the direct, secondary, and cumulative impacts to both wetlands and streams for each activity/alternative.   | The DEIS has been revised. Detailed information regarding direct, indirect, and cumulative impacts can be found in section 4 within each specific resource category.  |
| EPA          | EPA-107             | Wetlands | Figures for direct impacts to wetlands are not provided until the HGM discussion on pages 131 and 135. Page 131 states that the Alternative 2.1 will result in total direct impacts (total clearing or filling) of 673 acres of vegetated wetlands "due to channel modifications." Then page 135 states that the TSP, Alternative 3.1, "would result in a 264 acre reduction in the direct impact footprint from the direct clearing, ditch excavation width, and spoil pile reductions when compared to alternative 2.1." So, the TSP would result in 409 acres of direct wetland impacts in the SJB, plus page 153 states that 9 acres of impact (resource not specified) will be directly impacted in the NMF. | Impacts of the project are discussed in Section 4 - Environmental Consequences. However, to specify the resource requested by EPA, Section 4.8.1.3, Alternative 2.2, has been revised by adding the following sentence: "Due to the closure footprint, a total of 9 acres of LGRB vegetated wetlands would be completely cleared and or filled and assumed to lose all wetland function." |
| EPA          | EPA-108             | Wetlands | These figures for the TSP (409 acres for SJB + 9 acres for NMF = 418 acres total) do not add to the 416 acres of direct impacts provided on page 9 of Appendix E Part 7.  | The 404(b)(1) evaluation will be corrected to show correct amount of direct impacts.  |
| EPA          | EPA-109             | Wetlands | It is unclear which specific activities cause which direct impacts and if the impacts of the proposed levee footprint at the NMF opening are included.  | Section 4.8.1 has been revised to site appropriate sections that detail activities that result in direct impact. See revised write up. Additionally, a summary of direct and indirect impacts to each specific function within each wetland subclass can be found in Appendix E, Part 6.  |



| Organization | Unique Identifier** | Theme(s)      | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|---------------|--|--|
| EPA          | EPA-110             | Wetlands      | The DEIS should clearly break out which activities result in which impacts and further describe and document each impact on maps.  | Wetland section has been revised to document which activities result in impacts.   |
| EPA          | EPA-111             | wetlands      | Calculations based on the figures provided for the levee footprint (1500 feet long with a base of 302') sum to 10.4 acres. However, only 9 acres of direct impacts are discussed. Is some of the area of the levee footprint considered to be upland or stream?                        | Although the closure footprint would be incorporated into the existing levee system, the footprint area subject to environmental impacts would be approximately 9 acres.   |
| EPA          | EPA-112             | ditch impacts | Direct impacts to streams in the NMF have not been provided. Has the USACE determined area to be upland based on clearing already conducted, or have wetland delineations been completed for the entire area?  | The DEIS has been revised to document direct impacts associated with the closure levee and structure in Mud Ditch. Construction would result in a need to mitigate 1,087.2 stream credits in the New Madrid Floodway. Impacts of the project and mitigation are discussed in Section 4.11. |
| EPA          | EPA-113             | general       | The DEIS should also address direct temporary impacts that may be associated with construction activities. These issues should be clearly addressed in the EIS.  | The DEIS has been revised by adding a short description of temporary construction effects to the last paragraph in the section 4.10.1, Water Quality Effects on Waters Within the Project Area.  |
| EPA          | EPA-114             | wetlands      | Section 2.2.3, page 36 compares magnitude of direct stream and wetland impacts in the SJB basin to the magnitude of secondary impacts in the NMF. This comparison is inappropriate because the resources and functions are different and cannot be directly correlated to one another. | Section 2 has been revised.  |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|----------|--|--|
| EPA          | EPA-115             | general  | The document does not support the concept that the primary impact area of the project is within the 5-year floodplain. | <p>This was clarified in Figure 3.6 as well as Section 3, Affected Environment, which states that: "The project area was further refined into a Primary Impact Area (PIA)... An elevation of 300 feet was used as the upper limit of the PIA (Figure 3.6).... The PIA can be further refined based upon the resource being analyzed due to the response threshold that results in an adaptation or produces a community structure. For example, the five-year flood frequency elevation was used to differentiate between riverine wetlands and flats (Klimas et al, 2009). Therefore, the five year floodplain served as the primary impact area for wetland analysis because floods greater than the five-year frequency do not play a major ecological role for wetlands at elevations greater than the corresponding five year flood frequency. Additionally, the five-year frequency elevation was used as the upper limit of suitable spawning and rearing fish habitat (J. Jackson, personal communication) for Mississippi River fishes. However, seasonally inundated habitat is exploited by waterfowl and shorebirds regardless of flood frequency as long as it occurs during the appropriate migration windows and is of appropriate depths (Battelle, 2010). The upper limit for shorebirds was the maximum observed stage, and the corresponding limit for waterfowl was the 100-year flood frequency elevation. Further information regarding the primary impact area for each significant resource can be found in the section of the draft EIS devoted to that specific resource."</p> |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|----------|---|--|
| EPA          | EPA-116             | general  | The document states, page 74, "the Village of Pinhook becomes isolated at the approximate 10-year flood elevation." If the project is designed to reduce flooding at Pinhook, then there would be significant impacts at the 10-year floodplain elevation.  | The primary impact area (PIA) for each resource analyzed was based on the ecological or economic characteristics of the resource and the potential affect of the project could have on those characteristics. For example, the five-year flood frequency elevation was used to differentiate between riverine wetlands and flats (Klimas et al, 2009). Therefore, the five year floodplain served as the PIA for wetland analysis. Additionally, the five-year frequency elevation was used as the upper limit of suitable spawning and rearing fish habitat (J. Jackson, personal communication) for Mississippi River fishes. However, seasonally inundated habitat is exploited by waterfowl and shorebirds regardless of flood frequency as long as it occurs during the appropriate migration windows and is of appropriate depths (Battelle, 2010). Therefore, the upper limit for shorebirds was the maximum observed stage, and the corresponding limit for waterfowl was the 100-year flood frequency elevation. Likewise, economic benefits occur and were assessed at elevations greater than the 5-year flood frequency. Further information regarding the PIA for each significant resource can be found in the relevant section of the DEIS. Revisions have been made to the DEIS with additional citations. |
| EPA          | EPA-117             | Wetlands | However, page 90 indicates that, "Although, USACE acknowledges that wetlands are located at elevations greater than the five-year flood frequency and that the project would reduce periodic flooding through flood risk reduction measures, wetland functions associated with lands above this elevation were not assessed because of the insignificant potential impact of the project on these lands." | The DEIS has been revised.   |
| EPA          | EPA-118             | Wetlands | How was it determined that potential impacts in areas above the 5-year floodplain would be insignificant?   | Section 3.8.1 has been revised regarding the utilization of the 5-year floodplain  |

| Organization | Unique Identifier** | Theme(s)    | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|-------------|---|--|
| EPA          | EPA-119             | Wetlands    | <p>Page 286 suggests that impounded interior runoff or backwater flooding do not play a significant role in maintaining wetlands status in areas above the five year floodplain, rather, hydrology is maintained by precipitation and groundwater interactions. The DEIS acknowledges some uncertainty exists regarding this assumption and to address that risk, the project would be monitored after constructed. This assumption is fundamental to an accurate assessment of project impacts, comparison of those impacts across alternatives, and formulation of mitigation necessary to offset unavoidable impacts. The scientific basis for this assumption needs to be provided in the context of a natural river floodplain with backwater flooding, and the primary hydrological and ecological drivers of the floodplain system need to be defined.</p> | <p>Section 3.8.1 has been revised explaining the utilization of the 5-year floodplain .</p>  |
| EPA          | EPA-120             | uncertainty | <p>To address uncertainty we recommend concomitant hydrologic modeling in areas where the greatest uncertainty exists, e.g., areas above the five year floodplain, on both mitigation sites and other lands as appropriate.</p>   | <p>The Corps recognizes that uncertainty exists (See Section 6). To address this uncertainty, the Corps proposes to monitor existing wetlands within the pre-project five-year floodplain to determine whether or not the areas are still wetlands even though the project resulted in a wetland subclass shift. Although the Corps is of the opinion that the greatest uncertainty occurs within the primary impact area (within the pre project five year flood frequency), the Corps will monitor additional sites at elevations greater than the pre-project five year flood frequency. The DEIS has been revised to include the additional areas.</p> |

| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|--------------|---|---|
| EPA          | EPA-121             | wetlands     | Page 54 states that the greatest impact to project area wetlands is due to an indirect impact associated with changed frequency and duration of flooding. Impacts could also stem from project-induced changes in timing, location, and degree of inundation/saturation of flooding.  | Comment noted.  |
| EPA          | EPA-122             | Connectivity | The DEIS does not appear to clearly describe the full component of potential indirect impacts to project area resources and how these impacts might vary across different alternatives. The DEIS needs to acknowledge that the TSP and other alternatives involving pump operations only provide limited connectivity with altered hydrology to the area. | Section 4 of the DEIS describes the significant impacts as a result of different project alternatives. Please refer to Section 2, Alternatives 3.1 and 3.2 are titled <i>Manage Connectivity</i> and Alternatives 4.1 and 4.2 are titled <i>Maintain Connectivity</i> . The Corps acknowledges that connectivity would be managed during different periods of the year. |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|----------|--|---|
| EPA          | EPA-123             | Wetlands | <p>Page 41, the document states that "natural wetlands would still be seasonally connected" however this amounts to only 26 days during the growing season. After April 15 no back water flooding would be passed into the NMF at elevations over 284 feet and pumps would be turned on, draining water from the area. The majority of flooding during fish spawning and rearing time, shorebird use, and wetland growing season would be eliminated. This also seems to disregard the important hydrologic interactions not only between backwater and headwater flooding, but also those interactions involving surface (inundation) and ground water (saturation) that occur in these areas, and that significant changes in the backwater flooding due to the project would likely have repercussions on the extent, frequency, duration and depth of inundation and/or saturation in these areas as well. Further clarification on this important issue is necessary and additional analysis and modeling of hydrologic alterations due to proposed activities may need to be conducted. A comparison of model output and/or hydrographs for the area for the alternatives is needed.</p> | <p>The Corps acknowledges that flood risks would be managed after 15 April in the New Madrid Floodway to provide agricultural economic benefits. The impacts associated with this reduced flooding have been quantified by the utilization of the fish, shorebird, and wetland models. All of these model have a hydrologic parameter that rely on the extensive hydrologic period of record. Although the project limits the extent of flooding past 15 April, it is important to note that the "majority of flooding" occurs prior to 15 April not after 15 April as indicated in the comment. The average daily sump elevation in the New Madrid Floodway is presented in the DEIS. The analysis indicates that, on average, the interior sump elevation reaches its maximum height in early April. Appendix C provides information regarding changes to hydrology including the timing, extent, frequency, duration, and depth of flooding. Hydrographs for each year over the period of record from 1943-2009 are provided that demonstrates the changes in hydrology as a result of each alternative are also provided. This extensive analysis was used in each of the models. A comparison of model results is found throughout Section 4 and each respective appendix.</p> |
| EPA          | EPA-124             | General  | <p>The descriptions of gate and pump management avoidance and minimization strategies, page 38, regarding isolating flood pulse for certain species is not consistent with recognizing the importance of the flood pulse for overall ecological health.</p>  | <p>The flood pulse is not restricted by species use, rather it is managed by correlation to Mississippi River hydrographs. The significant ecological resources (waterfowl, wetlands, fish, and shorebirds), social impact thresholds (elevation of roads), and planting dates were used to formulate management options.</p>   |



| Organization | Unique Identifier** | Theme(s)  | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|-----------|---|--|
| EPA          | EPA-125             | Wetlands  | This section (pg38) does not address the hydrologic requirements for plants that make up the vegetated wetlands in the area and provide shelter, food, and migration corridors between flooded agricultural lands.  | Section 2 has been revised. Wetlands are discussed in Section 3.8.1 and 4.8.1.   |
| EPA          | EPA-126             | wetlands  | The hydrologic regime for maintenance of area plant communities appears to have only been considered in the context of restoration of Big Oak Tree State Park rather than the entire project area.  | Maintain plant communities is a wetland function that was specifically addressed with the HGM Model (see DEIS, Section 4.8.1).   |
| EPA          | EPA-127             | General   | Page 61 concludes that, "the greater the area removed from flooding, the greater the environmental impacts." Yet, the preliminary document does not provide a clear description of the amount of area that would be removed from flooding for each of the alternatives. | The DEIS has been revised to include a table that compares acreages associated with different flood frequencies for each different alternative.  |
| EPA          | EPA-128             | Editorial | Figure 3.12 is a very helpful depiction of the existing flood return intervals in the New Madrid Floodway. It would also be useful to include similar images depicting flood return intervals for each alternative.   | The DEIS has been revised with the suggested figures.  |
| EPA          | EPA-129             | Wetlands  | Furthermore, we recommend a table be included in the DEIS that shows the corresponding amount of total acreage and wetland acreage that would and would not be flooded (compared to current conditions) for each alternative.   | The recommended tables are provided in Section 4.8.1-Wetlands. The tables provide acreages (including projected WRP acreages) as well as the associated functional capacity units for each different alternative. Impacts to functional capacity units are also provided. Tables are provided in the Wetland Appendix that demonstrate the shift (in acres) to wetland subclasses as a result of each alternative. Additionally, Table 4.3 provides flood return frequencies for all project alternatives and Table 4.2 provides land cover data by elevation. Using these two tables, estimates can easily be compared. Impacts of the project are appropriately based on habitat/function. Therefore, tables in the EIS express impacts as a unit of function or habitat, not acres. |

| Organization | Unique Identifier** | Theme(s)      | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|---------------|---|--|
| EPA          | EPA-130             | General       | Page 114 indicates "no changes to overall land use classification would be expected regardless of the chosen alternative" and "no conversion of forested areas to agriculture would be expected." We recommend the DEIS clearly describe the basis for these assumptions.     | The DEIS has been clarified to describe the basis for this assumption and monitoring is proposed to validate the uncertainty regarding the assumption (see DEIS section 6 and 7).  |
| EPA          | EPA-131             | WRP           | Consideration of Wetland Reserve Program enrollment in the document is not well supported and may not have been realistically calculated in assessment of impacts, practicability of alternatives, and future scenarios for the area post project (Section 2.1.4.2, page 24). | During the model certification review (Volume 3, Part 6.4) conducted for the shorebird model, the expert panel advised the team to: "Estimate the effects of future changes in land use by projecting future changes based on a recent history of land-use changes in the study area. (e.g., If "x" % of the agricultural land has been retired to the Conservation Reserve Program (CRP) in the past 10 years, it may be reasonable to assume that "y" % will be retired in the next 10 years.)" The WRP predictions are provided in Section 4.3 of the DEIS and Appendix M, Part 1. These estimates were developed in consultation with the NRCS, coordinated with the interagency team, and reviewed during IEPR. |
| EPA          | EPA-132             | General       | There are functional and geographic areas where additional analysis of potential impacts is needed.   | Based on interagency coordination during the development of the Project Work Plan and three IEPR phases, the Corps is of the opinion that all significant functional and geographic areas were identified and assessed in the DEIS. However, the DEIS has been revised to include further analysis <u>regarding recreation</u> .   |
| EPA          | EPA-133             | ditch impacts | Information is not provided regarding the secondary impacts to streams as a result of levee closure and pumping, such as how hydrology of the ditches will be impacted.   | No significant secondary impacts to ditch habitat as a result of the levee closure and pumping station is anticipated. The Draft EIS has been revised to clarify this issue.   |
| EPA          | EPA-134             | ditch impacts | Increasing the depth of area ditches could cause stability problems for connected ditches, such as head cuts, culvert replacements, impacts to roads, etc.  | The Corps concurs that there could be instability issues at the confluence of construction reaches and other ditches as well as culverts that drain adjacent farm fields. The TSP recommends the construction of weirs/hard points at the confluence of tributaries as well as the replacement of adjacent culverts to ensure the proposed project does not inadvertently lead to channel incision problems. The DEIS has been revised to include a discussion on channel incision (see DEIS Section 4)  |

| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|--------------|---|---|
| EPA          | EPA-135             | Wetlands     | What will be the secondary impacts to adjacent wetlands due to increasing the depth of the ditches, and presumably the lowering of the water table? These impacts should be addressed in the DEIS.  | The hydrologic impacts have been accounted for in the hydrologic model and are incorporated into post-project return interval frequencies. Frequency and duration of flooding was calculated for each HGM site used in the analysis, which compared pre- and post-project conditions. |
| EPA          | EPA-136             | Alternatives | Section 2.1.3 Levee Closure Alternatives, pages 21-23, only provides the figures for costs of alternate levee alignments and does not provide numbers on impacts of these alternatives. What is the source or basis for the figure used for mitigation costs? | No mitigation costs were used. The DEIS has been revised to discuss the screening process used to dismiss alternate levee locations.  |
| EPA          | EPA-137             | Alternatives | The description of these alternative levee alignments does not include a breakdown of the direct impacts of the levee footprints themselves.  | The DEIS has been revised to provide additional documentation on why alternate levee alignment were not retained for detail analysis.   |

| Organization | Unique Identifier** | Theme(s)            | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|---------------------|--|--|
| EPA          | EPA-138             | Mitigation - Policy | The Interagency Review Team in Missouri has prioritized forested wetlands, particularly bottomland hardwood forests with river connectivity, as one of the most important resources to avoid damages. Mitigation of unavoidable impacts to forested wetlands is required at a ratio of 4 or more acres replacement for every one acre of impact. | <p>The amount of mitigation required to compensate for the significant unavoidable impacts of the project are described in detail in Section 4 and the supporting appendices. Although mitigation ratios are commonly used for private regulatory applicants, this project has utilized more rigorous functional/condition assessments to determine the overall amount of compensatory mitigation. Each of the applicable ecological models has undergone an independent review and has been determined to be suitable for the project. 33 CFR 332.2(f) states:</p> <p>“If the district engineer determines that compensatory mitigation is necessary to offset unavoidable impact to aquatic resources, the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions. In cases where appropriate functional or condition assessment methods or other suitable metrics are available, these methods should be used where practicable to determine how much compensatory mitigation is required. If a functional or condition assessment or other suitable metric is not used, a minimum one-to-one acreage or linear foot compensation ratio must be used.” See Section 5 of the revised DEIS.</p> |
| EPA          | EPA-139             | wetlands            | The analysis of each alternative, including alternate levee alignments, should clearly articulate impacts to forested wetlands.  | Impacts to wetlands are addressed in Section 4.8.1. The screening process regarding alternate levee alignments is discussed in Section 2. The goal of avoiding and or reducing environmental impacts can be economically and practically achieved by modifying the operation of the gated structure. Therefore, alternative levee closures were not addressed in detail.   |
| EPA          | EPA-140             | Alternatives        | The description of impacts for alternate levee alignments should also include numbers on the acreage that would remain hydrologically connected to the Mississippi River.  | The DEIS has been clarified by showing acreages that would remain hydrologically connected.  |
| EPA          | EPA-141             | General             | Impacts to Water Quality, Recreation, and Special Aquatic Sites Have Not Been Adequately Addressed   | Water quality section, recreation and 404(b)(1) evaluation were revised to provide additional detail and clarity.  |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|----------|---|---|
| EPA          | EPA-142             | 404b1    | The 404(b)(1) analysis contained in Appendix E Part 7 does not appear to sufficiently consider cumulative, direct or secondary/indirect impacts to water quality, special aquatic sites (wetlands, riffle and pool complexes), and/or recreation.   | Section 404(b)(1) Report and applicable sections of the DEIS have been revised to clarify analysis regarding cumulative, direct or secondary/indirect impacts to water quality, special aquatic sites, and or recreation. |
| EPA          | EPA-143             | General  | The EPA recommended in the September 2011 comments that the DEIS needs to: Provide a complete scientific evaluation of current functions provided by project area resources (i.e., fish and wildlife habitat, water quality maintenance, water storage, recreational use), most importantly, those linked to the connectivity (flood pulse) of the Mississippi River, and potential impacts to those functions under each alternative. Additional analysis is recommended to adequately describe the resources within the project area. | Revisions were made to clarify impact and mitigation analyses of these functions.   |

| Organization | Unique Identifier** | Theme(s)      | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|---------------|---|--|
| EPA          | EPA-144             | water quality | Page vii states that "water quality will be improved as a result of mitigation." However, this has not yet been demonstrated. | DEIS Section 4.10.3 states: "However, the effect of the authorized project on export, relative to the existing condition, remained similar (i.e., 15% reduction in total phosphorous (TP) and total nitrogen (TN) export, up to 60% reduction in sediment export)." It has been documented that grass buffer strips as narrow as 15 feet trap approximately 90 percent of NH4-N, NO3-N and PO4-P, and that trapping efficiencies increased to between 96 percent and 99.9 percent when the buffer width was increased to 30 feet. The proposed ditch mitigation includes over 45.8 miles of riparian buffer along area ditches. Proposed mitigation involves a 25-foot wide tree buffer on one bank; in addition, a 40-foot wide grass buffer on the opposite bank would be implemented as an environmental design feature, which is anticipated to be highly ecologically beneficial to the project area as many of the area ditches are currently farmed to top bank. Likewise, buffer strips are proposed around ecologically designed borrow pits. Based on the conclusions of the DEIS, it was determined that over 12,000 tons of nitrogen would not be applied cropland over the course of the project life due to the conversion of these agricultural areas to forested areas through project mitigation. Considering the vast amount of published scientific information detailing the negative effects of agricultural practices on water quality, the effectiveness of riparian buffers in preventing nutrients and sediment from entering waterways, coupled with the removal of over 10,000 acres of land currently in agricultural production, USACE is confident that the project and associate mitigation will result in an improvement in water quality. |
| EPA          | EPA-145             | water quality | We recommend the DEIS consider additional measures to maintain and improve water quality.                                     | See response to EPA-144 for the additional water quality improvements offered by forested riparian buffer strips (implemented as a mitigation measure), grass riparian buffer strips (implemented as an environmental design feature), and the reduction of non-point source pollution and sediment retention that would provided through project implementation. Through these measures, USACE is of the opinion that the project would result in improvements to water quality within the project area ditches themselves as well as the receiving Mississippi River. No changes to DEIS are warranted.  |



| Organization | Unique Identifier** | Theme(s)            | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|---------------------|--|--|
| EPA          | EPA-146             | monitoring          | Water quality should also be monitored post-project; we recommend installing a real time water monitoring station (such as used by the US Geologic Survey) at the mouth of both the St. Johns and New Madrid basins.   | The DEIS (Section 7.2.7) has been revised to include the recommendation of installing "real-time" water quality stations.  |
| EPA          | EPA-147             | monitoring          | Pre-construction, construction period, and post construction real time water monitoring should be conducted until mitigation is considered to meet all performance standards.  | Section 7.2.7 has been revised based on the recommendation.  |
| EPA          | EPA-148             | Adaptive Management | If at any time water quality is worse than pre-project monitoring then adaptive management should be triggered and additional mitigation required.   | No significant impacts to water quality are anticipated. However, water quality will be monitored in Phase 2 Adaptive Management. Phase 2 Adaptive Management will include thresholds for water quality decisions that will be used if monitoring determines that water quality is degrading as a result of implementation of project mitigation.  |
| EPA          | EPA-149             | water quality       | Page 232 indicates that the water quality analysis for the project show the authorized project would reduce total phosphorus and nitrogen export by 15% or more. What assumptions were used for this model, and have these finding been corroborated with appropriate water quality experts on the Independent Expert Panel Review, US Department of Agriculture, US Geologic Survey or others involved in the previous SPARROW modeling effort? | The water quality analysis for the project was conducted by Dr. Steve Ashby and Dr. David Soballe of the Engineer Research Development Center. Both of these individuals are considered experts in the field of water quality. The analysis consisted of a revision to the original work conducted by Ashby in 2000. As stated in the Water Quality Appendix Executive Summary (pg ii): "In Ashby et al. (2000), spreadsheet calculations were used to assess relative impacts with and without the project. The rationale for inputs and assumptions in the spreadsheets was discussed with representatives of Federal and state agencies prior to application. In this revision, those earlier assumptions and inputs are carried forward." Revisions to the original Ashby (2000) report are provided. The Phase III IEPR has reviewed the current water quality analysis and suggested minor revisions (See Phase 3 IEPR, Comment Response 27). Although the draft EIS has not been submitted to other agencies such as the Department of Agriculture and US Geological Survey for comment, these agencies will be included to the project's public distribution list. |

| Organization | Unique Identifier** | Theme(s)      | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|---------------|---|--|
| EPA          | EPA-150             | water quality | Furthermore, page 275 suggests project implementation would provide a reduction or delay in the growth of the hypoxic zone in the Gulf of Mexico. The basis for these conclusions needs to be provided in the document. | Discussion referenced on page 275 concerns cumulative impacts and ecosystem services which summarizes results from Section 4.12, Ecosystem Services. The basis for these conclusions is provided in Section 4.12.2, Nutrient Cycling, which states: "Nutrient cycling analysis consisted of estimating nitrogen loading using conventional agricultural practices for five main crop species (all others were classified as "other") in the project area. Estimated nitrate (NO3) losses on agricultural land as well as the denitrification potential of wetlands were obtained from Jenkins et al. (2010)." Furthermore, Section 4.12.2.2 adds: "The tentatively selected plan would remove 12,183.92 tons of nitrogen from the project area over the course of the project life due to compensatory mitigation for fish and wildlife impacts (Tables 4.92 and 4.93). As with the no action alternative, tremendous gains in nitrogen reduction are seen by the removal of agricultural land from production, and when coupled with reforestation, the effects on adjacent and downstream landscapes would be very beneficial." Finally, Section 4.12.3, Ecosystem Services Conclusion, provides a reference to a widely recognized peer reviewed publication which concluded that: "Management efforts must be made at specific landscape locations to reduce nutrient runoff, which would improve the water quality of streams and rivers, leading to a reduction of the hypoxic zone in the Gulf of Mexico (Robertson et al., 2009).", thereby providing the basis for the referenced conclusion contained on page 275. |
| EPA          | EPA-151             | recreation    | The DEIS does not adequately address impacts to recreation and flood storage functions.   | The DEIS has been revised to include a discussion on recreation. Likewise, the DEIS has been revised to include a discussion on flood storage function.  |
| EPA          | EPA-152             | Flooding      | The DEIS does not adequately address impacts to recreation and flood storage functions.   | The DEIS has been revised indicating that no increase in flood risk will result to areas and communities after implementation of the project based on the location of the surrounding river communities and the corresponding protective Mississippi River Levee system.   |
| EPA          | EPA-153             | General       | These resources are not included in the assessment and comparison of impacts for each alternative and are not listed in Table 1.2, page 16, "Relevant issues, resources, and concerns," for the project area.           | While recreation was not identified as a significant concern during initial public and interagency scoping, the DEIS has been revised to include a discussion on recreation.   |

| Organization | Unique Identifier** | Theme(s)   | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|------------|--|--|
| EPA          | EPA-154             | recreation | For example, impacts to hunting/fishing and tourism in the project area and on the Mississippi River as a result of the TSP, or potential increases in these and other recreational activities for each of the alternatives, is not provided in the DEIS.  | The DEIS has been revised to include a discussion on recreation.   |
| EPA          | EPA-155             | recreation | Recreation is not addressed until Appendix E, Part 3, Wetland Goods and Services and the conclusion (as well as others within this Appendix) is not supported by science.  | The DEIS and 404(b)(1) has been revised to include a discussion on recreation.   |
| EPA          | EPA-156             | recreation | This does not include a full assessment of the recreational value of area resources, such as Big Oak Tree State Park, hunting and fishing habitat on private and publicly owned lands, Ten Mile Conservation Area, or recreation on the Mississippi River. | The DEIS has been revised to include a discussion on recreation.   |
| EPA          | EPA-157             | Flooding   | The flood storage and attenuation benefits that occur because of the flood pulse are not being adequately quantified.  | The DEIS has been revised indicating that no increase in flood risk will result to areas and communities after implementation of the project based on the location of the surrounding river communities and the corresponding protective Mississippi River Levee system. |
| EPA          | EPA-158             | Editorial  | Page 92 describes discussions held during the 1-2 October 2012 site visit by agency representatives. We recommend deleting this discussion from the DEIS.  | The discussion regarding the 1-2 October 2012 site visit has been removed from the DEIS.   |
| EPA          | EPA-159             | general    | Major factors in the impacts assessment should be based on the best available science and suitably referenced in literature and other documentation.   | The Corps concurs and conducted an exhaustive independent review of its models and the project report.   |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|----------|---|--|
| EPA          | EPA-160             | Flooding | The EPA has comments on the project recommending that the EIS fully consider flood water storage of all lands (regardless of wetland status) as a major area resource.  | The DEIS has been revised indicating that no increase in flood risk will result to areas and communities after implementation of the project based on the location of the surrounding river communities and the corresponding protective Mississippi River Levee system.   |
| EPA          | EPA-161             | Flooding | The function of flood storage, both of Mississippi River backwater flooding and interior runoff, is a major factor for the purpose and need of the project and comparison of alternatives.                      | See response to EPA-152 comment. The DEIS has been revised indicating that the loss of flood storage available to the Mississippi River through closure of the 1500-foot gap in the New Madrid Floodway would have a negligible effect on stages and durations in the Mississippi River from the authorized St. Johns-New Madrid project. Since no alternative considered in the DEIS would result in a condition that would provide a greater loss of flood storage available to the Mississippi River from the New Madrid Floodway than that provided by the authorized project, a comparison of alternatives related to flood storage is unnecessary. |
| EPA          | EPA-162             | Flooding | Flood storage should be quantified for each alternative.  | See response to EPA-152 comment. The DEIS has been revised indicating that the loss of flood storage available to the Mississippi River through closure of the 1500-foot gap in the New Madrid Floodway would have a negligible effect on stages and durations in the Mississippi River from the authorized St. Johns-New Madrid project. Since no alternative considered in the DEIS would result in a condition that would provide a greater loss of flood storage available to the Mississippi River from the New Madrid Floodway than that provided by the authorized project, a comparison of alternatives related to flood storage is unnecessary. |
| EPA          | EPA-163             | Flooding | The discussion regarding economic benefits of the flood pulse and lands connected to the Mississippi River and area ditches should include an assessment of the monetary value of flood storage and recreation. | The EIS has been revised to discuss that there is no significant economic loss associated with changes in floodplain storage with the project. See EPA-152. However, there is a value regarding flood conveyance during Floodway activation.   |
| EPA          | EPA-164             | Flooding | Increases in flood water storage result in decreased flooding and flood damages elsewhere.  | The DEIS has been revised indicating that no increase in flood risk will result to areas and communities after implementation of the project based on the location of the surrounding river communities and the corresponding protective Mississippi River Levee system.   |

| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|--------------|---|---|
| EPA          | EPA-165             | recreation   | Economic gain as a result of fishing, hunting, tourism, and other recreational activities can also be included.   | The DEIS has been revised to include a discussion on recreation. Although benefits to recreation are anticipated, economic gains were not quantified. |
| EPA          | EPA-166             | Alternatives | Section 2.1.4.1 Refuge/Conservation Area, page 23 states that this alternative would "offer no relief from flooding to the remaining 62, 797 acres of land in the five-year flood frequency." We recommend providing the scientific basis for this statement. | The DEIS has been revised to clarify. The acreages refer to the total available acreages of land in the 5-year flood frequency.                       |
| EPA          | EPA-167             | Alternatives | A substantial refuge or conservation area may significantly increase the flood storage capacity of the New Madrid Floodway basin thus reducing flood pressures on other areas.  | The DEIS has been revised to clarify the screening process.   |
| EPA          | EPA-168             | Alternatives | The impacts, both adverse and beneficial, of this activity (refuge/conservation area) are not provided.   | The DEIS has been revised to clarify the screening process indicating that a refuge is not practicable in light of the project purpose.               |
| EPA          | EPA-169             | Alternatives | The analysis should include acreages of wetlands preserved or restored, acreages of lands connected to the Mississippi River, recreational values, increases in water storage, as well as benefits to water quality and fish and wildlife.                    | The DEIS has been revised to clarify the screening process indicating that a refuge is not a practicable alternative in light of the project purpose. |
| EPA          | EPA-170             | Alternatives | This section also indicates that a refuge is not "economically justified" but does not provide any figures to support this.   | The DEIS has been revised to include additional analysis documentation why a refuge was not retained for detailed analysis.                           |
| EPA          | EPA-171             | recreation   | The value of potential increase in recreation for the area is absent from the evaluation of this alternative.   | The DEIS has been revised to include a discussion on recreation. Although benefits to recreation are anticipated, economic gains were not quantified. |

| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|--------------|--|--|
| EPA          | EPA-172             | Alternatives | It is unclear why the expansion of refuge and conservation areas is not feasible as an alternative due to the local community being unwilling to sell the necessary lands, yet expansion of Big Oak Tree State Park is considered feasible as an activity for compensatory mitigation.   | The FWS stated that the refuge was not practicable as a standalone measure. Based on discussion with the project sponsor, restoring Big Oak Tree State Park is practicable for mitigation that involves reducing agricultural flood damages.   |
| EPA          | EPA-173             | General      | Special aquatic sites are sanctuaries and refuges, wetlands, mud flats, vegetated shallows, coral reefs, and riffle and pool complexes ( 40 CFR 230 Subpart E). "They are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region" (40 CFR 230.3(q-1)). | The DEIS has been revised to clarify the analysis on special aquatic sites (see 404(b)(1) Evaluation and references to specific sections of the DEIS).   |
| EPA          | EPA-174             | General      | There are functional and geographic areas where additional identification of special aquatic sites and analysis of potential impacts is needed.  | Based on interagency coordination during the development of the Project Work Plan, three IEPR phases, and interagency preliminary review, the Corps finds that all significant functional and geographic areas are identified and assessed through the recent revisions to the DEIS. |



| Organization | Unique Identifier** | Theme(s)         | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|------------------|--|--|
| EPA          | EPA-175             | ditch impacts    | Discussion of area streams/ditches is insufficient, including identification of riffle/pool complexes.   | Agricultural ditches within the project area consist of straight, trapezoidal channels with a relatively flat, uniform bed devoid of substantial bar structures. This is in contrast to natural streams with meandering channels with complex structure consisting of riffles, pools, and runs. Smaller ditches usually contain more bed vegetation and are usually located further from receiving streams. Larger ditches contain less bed vegetation and are often in closer proximity to receiving streams. While some reaches of larger ditches and streams have areas of appropriate riparian buffer, a vast majority of the project area ditches have little to no buffer and are farmed to top bank. The DEIS has been revised to include a discussion on channel geomorphologic characteristics. |
| EPA          | EPA-176             | Purpose and Need | The purpose and need for the proposed activities on area ditches has not been provided.  | Section 1 has been revised clarifying the purpose and need for the project, including a discussion of project area ditches.  |
| EPA          | EPA-177             | Alternatives     | No assessment of alternatives was provided for ditch work, such as, incorporating Natural Stream Channel Design, and developing side channels and/or additional adjacent wetlands to increase flood capacity.                        | The existing ditches are not natural streams. They are artificially created drainage canals. Therefore, no assessment was made to change an artificial drainage canal to a natural stream. However, mitigation is proposed to provide additional stream habitat by creating stream sinuosity with the construction of transverse dikes.  |
| EPA          | EPA-178             | Purpose and Need | The DEIS should provide a clear purpose and need for activities on area streams as well as describe the expected benefits and adverse impacts. Impacts to streams should be included in the comparison of alternatives in Table 2.8. | Section 1 has been revised clarifying the purpose and need for the project, including a discussion of project area ditches. Impacts to ditches have been clarified in Section 5.   |
| EPA          | EPA-179             | ditch impacts    | The potential for significant degradation of area streams is not included, and assessment of the presence of riffle/pool Special Aquatic Sites is not provided.  | Although construction activities in the St. Johns Bayou Basin will enlarge ditches, significant degradation is not expected because these ditches are not natural streams. The ditches were constructed decades ago to convert bottomland hardwoods to cropland. Agricultural ditches in the project area consist of straight, trapezoidal channels with a relatively flat, uniform bed devoid of substantial structure. All ditches undergo routine vegetation and sediment removal. Following channel enlargement, ditches will still be morphologically similar (straight, trapezoidal channels, limited structure, etc.).  |

| Organization | Unique Identifier** | Theme(s)      | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|---------------|--|--|
| EPA          | EPA-180             | ditch impacts | Page 48 of the document states, "some of these artificially created canals have stream characteristics and functions" yet Appendix E Part 7, page 9, simply states that effects on special aquatic sites, riffle and pool complexes, is "not applicable."      | The full sentence reads "Although some of these artificially created canals have stream characteristics and functions, many ecological functions are impaired." Appendix E has been revised.   |
| EPA          | EPA-181             | ditch impacts | Page 37 of the document states "the decrease in mussel populations is most likely due to the recent basin-wide ditch maintenance that has occurred (vegetative and sediment removal)."   | The DEIS has been revised to state that these cleanouts may explain the low number of live mussels collected in 2010 when compared to previous unionid mussel surveys within the project area. Overall mussel numbers were reduced, but similar species were collected in comparison to previous studies in the project area. Habitat could be potentially decreased as a result of the project, in a similar fashion as the recent ditch cleanouts, but the population would be expected to return to pre-disturbance levels.   |
| EPA          | EPA-182             | ditch impacts | This indicates that the type of ditch maintenance proposed in the TSP can have significant adverse impacts.  | Based on the most up to date mussel surveys, no significant adverse impacts to mussel populations are expected because the mussels are no longer found in numbers that occurred during the past. Previous mitigation originally proposed in 2006 after consultation with the Missouri Department of Conservation and U.S. Fish and Wildlife Service recommended relocation and monitoring of recolonization. Based on mussel surveys conducted in the adjacent St. Francis basin (USACE, unpublished mussel survey reports), mussels are expected to recolonize the ditches after project channel modification. Prior to channel modifications, the Corps will conduct additional surveys to ensure the conclusions are still valid. These surveys will be coordinated with the interagency team to determine if any additional mitigation is necessary. |
| EPA          | EPA-183             | ditch impacts | In addition, secondary impacts to area streams as a result of hydrologic alteration and elimination/reduction of the flood pulse in the NMF are not discussed for all the alternatives, nor are they reflected in the comparison of alternatives in Table 2.8. | The DEIS has been revised to clarify that no secondary impacts to streams are expected in the New Madrid Floodway as a result of constructing the closure levee and gated structure.   |

| Organization | Unique Identifier** | Theme(s)            | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|---------------------|--|---|
| EPA          | EPA-184             | Wetlands            | There is also no specific or geographic information provided regarding the direct impacts to wetlands within the areas where ditch maintenance will occur.   | Section 4.8.1.2 has been revised to state: "A total of 673 acres of LGRO vegetated wetlands would be directly impacted due to channel modifications discussed in Section 2.2.2.1 and would be assumed to lose all wetland function." Section 2.2.2.1 provides details and locations of channel modifications.   |
| EPA          | EPA-185             | Wetlands            | How were the estimates of impacts to wetlands assessed for these areas (ditches)?  | As stated in Section 4.8.1, impacts to wetlands associated with channel modification have been assumed to be a total loss and assumed to lose all wetland function.   |
| EPA          | EPA-186             | wetlands            | Can fill of these wetlands (ditches) be avoided, or are there alternatives that would have less impact, such as placing dredged material in uplands?   | The avoid and minimize alternative, Alternative 3.1, reduces the impact from a two sided enlargement proposed in the authorized project to a one side enlargement (right descending bank). In addition, alternative 3.1 reduces the proposed bottom width increase by 80 feet. Furthermore, rights of way along St. James Ditch would be obtained along alternate sides to protect areas of riparian vegetation (i.e., spoil material would be placed into areas that are likely prior converted cropland as opposed to vegetated areas, where practical). Moving spoil material to uplands is not practical and may not reduce wetland losses. Hauling the material is not practical because a temporary disposal area would still have to be obtained at the construction site and an additional permanent disposal area would have to be obtained elsewhere. Hauling disposal significantly increases cost as well as construction of access roads. Vegetation would still have to be cleared and spoil material would still be placed in the project right of way, even if only temporary. Thus, impacts would still occur. Access road construction may result in additional wetland losses. Lastly, the project sponsor will still impact the site through future maintenance. Therefore, the current plan proposes to place the material at the areas identified in the EIS. However, during the development of detailed plans and specification and prior to construction, the project right of way will be reexamined to determine if plans require alteration. Any changes to the plan will be coordinated with the interagency team. |
| EPA          | EPA-187             | Mitigation - Policy | The Advance DEIS does not clearly demonstrate that the proposed actions would be fully compliant with the Compensatory Mitigation for the Losses of Aquatic Resources Final Rule (40 CFR Part 230, Subpart J). | Although mitigation will not be achieved until tract-specific detailed mitigation plans are developed, coordinated with the interagency team, approved by the Missouri Department of Natural Resources, confirmed with monitoring, and adaptively managed, the Corps is of the opinion that there is adequate discussion in Section 5 to demonstrate compliance.  |

| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|-----------------------------|---|--|
| EPA          | EPA-188             | Mitigation - Implementation | Section 2.3 of the Advance DEIS states "There is a level of uncertainty with mitigation since specific tracts have not been identified to date." Because specific lands have not yet been identified, it is challenging to discern whether the DEIS demonstrates that unavoidable impacts to aquatic resources can be adequately compensated. | Although specific tracts have not been identified, specific zones have been established. Post-project hydrology has been determined from each specific zone and the DEIS has made conservative estimates regarding benefits to aquatic resources from each zone (see applicable sections in Section 4). The risk associated with not knowing tract-specific areas for each habitat/function is provided in Section 6. Section 5 has been revised to include additional discussion regarding mitigation implementation.   |
| EPA          | EPA-189             | Mitigation - Science        | The DEIS does not provide a clear, detailed articulation of how proposed compensatory mitigation features specifically compensate for the project's effects on area hydrology, in particular, the timing, extent, frequency, duration and depth of inundation and/or saturation.  | Although each ecological model measures hydrologic components (timing, extent, frequency, duration, depth, etc.) somewhat differently, hydrology and underlying land use were considered in the quantification of project impacts. Model specific hydrologic parameters are discussed in Section 4, the H+H appendix, and each ecological resource specific appendix. In a consistent manner, hydrology and underlying land use are considered in the determination of mitigation. Detailed discussions regarding each specific resource are found in Section 4 and the applicable appendices. |
| EPA          | EPA-190             | General                     | The DEIS lacks complete information to address the project's indirect impacts on areas proposed as mitigation sites.  | Benefits provided by proposed compensatory mitigation features were calculated using post project hydrology (See Section 5). Therefore, any indirect adverse hydrology impacts were accounted for prior to assessing the value of a compensatory mitigation feature.   |
| EPA          | EPA-191             | General                     | The TSP's avoid and minimize features allow for riverine flooding only during winter months, not during the growing season.   | The TSP, which includes avoid and minimize features, allows for flooding to occur during the growing season. Impacts as a result of managing the flood pulse have been quantified and mitigation is proposed to compensate unavoidable adverse impacts.  |
| EPA          | EPA-192             | General                     | As a result (of the TSP's avoid and minimize features allow for riverine flooding only during winter months, not during the growing season), the alternative would appear to inhibit wetland functions during the growing season thereby minimizing benefits of any mitigation within the project area.                                       | The TSP, which includes avoid and minimize features, allows for flooding to occur during the growing season. Impacts as a result of managing the flood pulse have been quantified and mitigation is proposed to compensate unavoidable adverse impacts.  |

| Organization | Unique Identifier** | Theme(s)             | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|----------------------|--|--|
| EPA          | EPA-193             | Mitigation - Policy  | The Missouri Interagency Review Team requires a minimum of 4:1 replacement for direct impacts to forested wetlands.  | See EPA 138  |
| EPA          | EPA-194             | Mitigation - Science | The EPA questions the use of batture lands for compensatory mitigation.  | The utilization and justification of batture land as suitable mitigation are discussed in Section 5. Additional information regarding the suitability of batture lands for mitigation can be found in the Phase 2 IEPR Comments/Responses 3 and 4 and Phase 3 IEPR Comment 9.  |
| EPA          | EPA-195             | Mitigation - Science | Because these (batture) lands are already connected to the Mississippi River, such areas would not appear to provide replacement of lost functions associated with severing wetlands within the project area from natural connectivity to the River. | Restoring bottomland hardwoods and riverfront forest in the batture land compensates for many impacted functions and habitat associated with the project. For example, the greatest impacts to wetland function in the New Madrid Floodway occurs to the Detain Floodwater function (see DEIS Section 4.8.1). According to the model, the Detain Floodwater Function is based on changes to flood frequency and the "roughness" of the underlying land use (see Appendix E, Part 5, at page 65). Mitigation in the batture land is not anticipated to change flood frequencies. However, reforestation and other micro/macro-topographical improvements will increase roughness. Thus, there is a functional lift in providing mitigation in the batture lands. Likewise, reforestation in the batture land will not increase Average Daily Flooded Acres for the fish model (see EIS, Section 4.8.5). However, forested areas provide a Habitat Suitability Index of 1.0 compared to a 0.2 for agricultural areas. Thus, reforesting agricultural areas in the batture provides a habitat lift. The compensatory mitigation objective is to replace functional value lost as a result of unavoidable adverse impacts. Detailed discussion is found in the applicable subsections of Section 4 and each applicable appendix. |

| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|-----------------------------|---|--|
| EPA          | EPA-196             | Mitigation - Policy         | The DEIS does not adequately demonstrate compliance with the Mitigation Rule (33 CFR 332 and 40 CFR Part 230, Subpart J), or address technical and ecological feasibility of the proposed activities to effectively compensate for impacts.                             | See FWS-7. EPA's concerns relating to the technical and ecological feasibility of the proposed mitigation are noted, however, the Corps has taken measures to ensure the likelihood of mitigation success through the following approaches: (1) basing mitigation on a watershed approach (Section 5); (2) using mitigation methods that are common practices throughout the Lower Mississippi Valley (reforestation, ecologically designed borrow pits, restoring agricultural fields to wetland conditions); (3) obtaining independent review on impact and mitigation calculations to ensure the scientific validity of those analyses; (4) incorporating interagency participation in the acquisition, planning and implementation of tract-specific mitigation plans; (5) identifying risk and utilizing monitoring to reduce risk and validate mitigation; and (6) adaptively managing the project to ensure any mitigation deficiencies are resolved. |
| EPA          | EPA-197             | General                     | The document does not address previous comments provided by the EPA, including: hydrologic alteration, management of the flood pulse, restoration of forested wetlands, and adequate compensation for stream impacts.   | The DEIS has been revised from previous versions to address previous comments on hydrologic alteration, management of the flood pulse, restoration of forested wetlands, and adequate compensation for stream impacts .  |
| EPA          | EPA-198             | Mitigation - Science        | Similar to the requirements for the Evaluation of alternatives, the rigor and detail of the comprehensive mitigation plan (which should be included in the DEIS) to demonstrate adequate compensation is commensurate with the degree of impacts (40 CFR 230.93(a)(1)). | Section 5 has been clarified to inform reviewers that they should reference the applicable sections of the EIS (Section 4 and appendices) regarding technical discussions regarding mitigation. While the DEIS provides assurance on the types of mitigation that would be implemented, that the mitigation would offset project impacts, and provide an estimate of costs required for mitigation and adaptive management actions, further refinement of mitigation actions will occur during detailed planning for individual mitigation projects. Any future mitigation planning would go through additional agency coordination.   |
| EPA          | EPA-199             | Mitigation - Implementation | Sufficient information is not provided to demonstrate that compensation is likely to succeed or can offset significant impacts.   | The Corps believes Section 5 fully demonstrates that project mitigation is likely to succeed or offset significant impacts. See responses to FWS-5 and EPA-188 above.  |



| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|-----------------------------|--|--|
| EPA          | EPA-200             | 404b1                       | The document does not support the conclusions of "no significant adverse effect" under the Evaluation of Extent of Degradation of the Waters of the United States in Appendix E, Part 7 Section 404(b)(1) Evaluation Report and does not demonstrate compliance with the requirements of 40 CFR 230.10(c).             | The Section 404(b)(1) analysis has been revised to clarify and further document the supporting data and discussion regarding the conclusions of the Draft Section 404(b)(1) Report.  |
| EPA          | EPA-201             | Mitigation - Science        | In evaluating whether compensation could offset significant impacts, the DEIS should consider, among other things, the severity of the impact at issue and the likelihood of being able to recreate the lost values. Some values (e.g., flood storage) are easier to offset than others (e.g., ground water recharge). | Mitigation is not intended to recreate all lost values. Instead mitigation is intended to compensate for impacts to waters of the United States pursuant to Section 404 of the Clean Water Act and pursuant to Corps of Engineers Civil Works policy as justified. The DEIS has been clarified to expand on the discussion of flood storage. Since there is no appreciable change in flood stage and discharge, no significant impacts to flood storage is anticipated. Likewise, the project will not effect groundwater interactions. The DEIS has been revised to include a discussion on groundwater interactions. Mitigation is intended to compensate for impacted functions according to the model. |
| EPA          | EPA-202             | Mitigation - Implementation | Likewise, some types of compensation (e.g., in-kind restoration in an appropriate geographic area) are more likely to succeed in offsetting impacts than are other types (e.g., preservation or offsite creation).   | The Corps concurs that some types of mitigation are more successful than others. The greatest opportunity for success comes through flexibility. The Corps approach will retain interagency flexibility in the mitigation planning, acquisition, and implementation of mitigation features. This will ensure that a carefully considered, ecologically effective and sustainable compensatory mitigation plan will be implemented.   |

| Organization | Unique Identifier** | Theme(s)             | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|----------------------|---|---|
| EPA          | EPA-203             | Mitigation - Science | Comments submitted by the EPA advised that functional losses resulting from elimination of the flood pulse and altered hydrology would be difficult to replace and may only be successfully mitigated by reconnecting equivalent areas within the Middle Mississippi River to natural flood pulses. | The tentatively selected plan will not eliminate the flood pulse. The flood pulse will be managed on a large portion of the project area that will remain subject to flooding during periods of the year that are beneficial to fish and wildlife resources. However, the Corps acknowledges impacts will still occur. As seen in the gains associated with Big Oak Tree State Park, restoring hydrology/connection provides mitigation benefits. However, restoring hydrology to Big Oak Tree State Park does not provide sufficient mitigation to fully compensate project impacts. Therefore, additional mitigation is necessary. In determining project impacts and mitigation benefits, the hydrologic component is only one parameter. The underlying land use also needs to be considered. Impacts and mitigation are expressed as habitat units or functional capacity units. Since the flood pulse will not be eliminated under the tentatively selected plan, locating mitigation sites within the area that will still be connected (i.e., within the post project five year flood frequency) is desirable. When both parameters (i.e., post project hydrology |
| EPA          | EPA-204             | Mitigation - Science | To demonstrate that it's possible to compensate for all losses and to achieve compliance with 230.10(c), the mitigation plan must meet two basic tests: 1. It should prevent or offset the adverse impacts that would otherwise give rise to a finding of significant degradation;                  | Compliance with this section is described in the revised 404(b)(1) Evaluation (see Appendix E, Part 7) as well as in Section 4.   |
| EPA          | EPA-205             | Mitigation - Science | To demonstrate that it's possible to compensate for all losses and to achieve compliance with 230.10(c), the mitigation plan must meet two basic tests: 2. It should have a good chance of success.   | The Corps intends to utilize Monitoring and Adaptive Management to ensure mitigation success. (See revised Adaptive Management and Monitoring - Section 7). The Corps has taken measures to ensure the likelihood of mitigation success through the following approaches: (1) basing mitigation on a watershed approach (Section 5); (2) using mitigation methods that are common practices throughout the Lower Mississippi Valley (reforestation, ecologically designed borrow pits, restoring agricultural fields to wetland conditions); (3) obtaining independent review on impact and mitigation calculations to ensure the scientific validity of those analyses; (4) incorporating interagency participation in the acquisition, planning and implementation of tract-specific mitigation plans; (5) identifying risk and utilizing monitoring to reduce risk and validate mitigation; and (6) adaptively managing the project to ensure mitigation deficiencies are resolved.  |

| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|-----------------------------|--|--|
| EPA          | EPA-206             | Mitigation - Policy         | The DEIS should be revised to include the appropriate level of planning and documentation elements (c)(2) through (c)(14) required by the Mitigation Rule (40 CFR §230.94 and 33 CFR § 332.4). | Each of the elements is discussed in Section 5. Each tract-specific plan will also incorporate all 12 elements.  |
| EPA          | EPA-207             | Mitigation - Implementation | A map of each mitigation parcel specifying type of mitigation should be provided; Figure 2.7 does not provide sufficient detail.   | Site-specific tracts have not been identified, however several tracts have already been purchased. Figures have been revised to include previous purchased mitigation tracts. Because of the scale of compensatory mitigation, it is impracticable to identify all mitigation tracts that will be acquired. Rather, the DEIS identifies mitigation zones with expected values for each functional replacement expected within that mitigation zone. These zones can be found on figures and a discussion of the zones can be found in Section 5. |
| EPA          | EPA-208             | Mitigation - Implementation | It is unclear where overlap between the different types of mitigation occurs and how everything fits together.   | Tables 5.3 and 5.4 provide overall relationship of mitigation features.  |
| EPA          | EPA-209             | general                     | The document breaks out resource types (shorebirds, wetlands, ducks, fish, etc.) however it is not clearly described how the sum of all the parts adequately offsets impacts.                  | Section 5 of the DEIS has been revised including tables for each basin that presents the sum of compensatory mitigation benefits to each significant resource category.  |
| EPA          | EPA-210             | General                     | The DEIS should address overall ecological integrity and condition of the watersheds pre and post project.   | See section 4.12 for a description of the project area in terms of ecological integrity pre- and post-project.   |
| EPA          | EPA-211             | General                     | Separating components to the extent provided in the DEIS does not adequately address ecological concerns.  | See responses to EPA-209 and 210   |
| EPA          | EPA-212             | Mitigation - Implementation | The DEIS does not indicate that mitigation sites will be designed to be self sustaining and protected in perpetuity as required by the Mitigation Rule 40 CFR § 230.97 (and 33 CFR § 332.7).   | Section 5 has been revised indicating that mitigation lands will be protected in perpetuity. Although there will be maintenance required for some mitigation tracts, most mitigation sites will be relatively maintenance free. Additional clarification will be made to the DEIS.   |

| Organization | Unique Identifier** | Theme(s)            | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|---------------------|---|---|
| EPA          | EPA-213             | Mitigation - Policy | The DEIS needs to be revised to address the requirements of the rule (Mitigation) to: minimize active engineering features (e.g., pumps);   | While the mitigation rule does not preclude engineering features, the mitigation objectives will be revised to state that self-sustaining mitigation will be preferred over active engineering features. 40 CFR 332.7(b) states: mitigation projects should be designed, to the maximum extent practicable, to be self-sustaining once performance standards have been achieved. This includes minimization of active engineering features (e.g., pumps) and appropriate siting to ensure that natural hydrology and landscape context will support long-term sustainability. Where active long-term management and maintenance are necessary to ensure long-term sustainability (e.g., prescribed burning, invasive species control, maintenance of water control structures, easement enforcement), the responsible party must provide for such management and maintenance. This includes the provision of long-term financing mechanisms where necessary." A discussion regarding maintenance is found in Section 5. |
| EPA          | EPA-214             | Mitigation - Policy | The DEIS needs to be revised to address the requirements of the rule (Mitigation) to: appropriately locate mitigation sites to ensure that natural hydrology and landscape context will support long-term sustainability;   | As recommended by the Mitigation Rule, a watershed approach was used to locate potential mitigation sites that compensate for project impacts. The approach used in the DEIS considers the importance of landscape position and resource type for the sustainability of aquatic resource functions within the watershed. The watershed approach is discussed in Section 5.  |
| EPA          | EPA-215             | Mitigation - Policy | The DEIS needs to be revised to address the requirements of the rule (Mitigation) to: provide active long-term management and maintenance to ensure long-term sustainability (e.g., invasive species control, maintenance of water control structures, easement enforcement); | Long term management and maintenance is discussed in Section 5.   |

| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|-----------------------------|--|--|
| EPA          | EPA-216             | Mitigation - Policy         | The DEIS needs to be revised to address the requirements of the rule (Mitigation) to: provide long-term financing mechanisms.  | Financial assurances are discussed in Section 5.   |
| EPA          | EPA-217             | Mitigation - Implementation | The proposed mitigation relies on extensive engineering and management of water levels through gates and pumps. This significantly increases the risk of the mitigation, both of structural failure and failure to manage the water levels as proposed.                  | The Corps acknowledges that some mitigation features require the utilization of engineered structures such as the one proposed to restore hydrology to Big Oak Tree State Park. Since this structure is located within the Mississippi Mainline Levee, it will undergo routine maintenance and inspection. Any deficiencies will be corrected. Adherence to water levels would be a requirement of the Project Cooperation Agreement between the Federal government and the non-federal sponsor.   |
| EPA          | EPA-218             | Mitigation - Implementation | The DEIS must describe assurances that will be put in place to ensure that water levels and mitigation sites would be managed appropriately in perpetuity.   | Adherence to water levels would be a requirement of the Project Cooperation Agreement between the Federal government and the non-federal sponsor. The adaptive management section has been changed to clarify that the sponsor must adhere to established water levels. Daily gage readings will be available on the Internet. Therefore, USACE, other regulatory agencies, interested stakeholders, or the general public would be able to view daily project data. Corrective actions either by USACE or the MDNR would occur in the event that the project is not being operated as intended. |
| EPA          | EPA-219             | Mitigation - Implementation | More description is needed regarding the coordination requirements (who, how, when) for implementation of compensatory mitigation activities.  | Section 5 has been revised to clarify the coordination requirements of mitigation activities.  |
| EPA          | EPA-220             | Mitigation - Implementation | The DEIS needs details of how the Interagency Review Team will be consulted to review and approve site specific mitigation designs, conduct compliance reviews, consult and approve adaptive management plans, and ensure corrective measures are implemented if needed. | see EPA 219  |

| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|-----------------------------|--|---|
| EPA          | EPA-221             | Mitigation - Implementation | On page 299 the details of how this will be implemented should be spelled out in the DEIS, and should include discussions of third party oversight of mitigation activities and financial assurances.  | Financial assurances are discussed in Section 5. Third party oversight of mitigation activities is not proposed since mitigation banks and in-lieu fee programs are not proposed and are currently not available. The interagency team will be consulted throughout mitigation planning, acquisition, implementation, monitoring, and adaptive management. Approval from MDNR would be required for any activities regarding the state water quality certification. |
| EPA          | EPA-222             | Mitigation - Science        | Similar to the discussion of assessment of impacts, the assessment of required compensatory mitigation needed to offset the direct impacts to forested wetlands must be separately and explicitly described in the document.                         | Section 5 has been revised to indicate mitigation required for direct impacts and indirect impacts.   |
| EPA          | EPA-223             | Mitigation - Policy         | Mitigation for direct impacts should be consistent with current Interagency Review Team policies and procedures.   | See EPA 138   |
| EPA          | EPA-224             | Mitigation - Policy         | The EPA has recommended that the USACE should consult with the Missouri IRT to determine appropriate levels of compensation for this project and standards to which it holds permittees and mitigation providers.                                    | See EPA 138   |
| EPA          | EPA-225             | Mitigation - Policy         | Absent site specific consultation, the DEIS should, at a minimum, incorporate the normal standard for mitigation of forested wetlands in Missouri at a rate of no less than four acres of mitigation for every one acre of impact (4:1 replacement). | See EPA 138   |
| EPA          | EPA-226             | Mitigation - Policy         | Temporal lag of functional replacement should be more clearly described in the DEIS so that adequate mitigation ratios can be determined.  | See EPA 138. Although mitigation is not based on ratios, the ecological models incorporated a temporal lag where justified. For example, Section 4.8.1.8 states that FCIs were annualized using the following year intervals: 0, 1, 5, 15, 25, and 50. Likewise, Section 4.8.5.10 discusses the temporal lag that was incorporated into fish mitigation.  |

| Organization | Unique Identifier** | Theme(s)             | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|----------------------|--|--|
| EPA          | EPA-227             | Mitigation - Policy  | Use of the HGM model to calculate mitigation for direct impacts is not the standard practice in Missouri and does not directly meet the requirements of the Mitigation Rule to ensure that compensation occurs at a minimum ratio of 1:1.  | See EPA 138  |
| EPA          | EPA-228             | Mitigation - Science | Ecological feasibility of proposed mitigation activities is not adequately addressed in the DEIS. For example, page xx, states "the tentatively selected plan proposes to take agricultural land, most of which is at low elevation and frequently subject to Mississippi River flood pulses, and revert it to historic forest habitat." | Response combined with EPA 229.  |
| EPA          | EPA-229             | Mitigation - Science | With the addition of the project pumps the areas that are wet will be quickly pumped dry during the growing season. Any acres of forest planted will unlikely become forested wetland because of the altered hydrology (inappropriate timing, frequency, and duration of flow to support the desired habitat).                           | As stated in Section 5, vegetated wetland restoration sites would reestablish microtopography and restore site-specific hydrology (i.e., plugging farm drains). All vegetated wetland sites will be located in the post-project five year flood frequency or adjacent batture area. All of these sites would remain seasonally connected following construction of flood risk management features. Although hydrology (timing, frequency, duration) will be modified as a result of operating the gates and pumps, the altered hydrology has been accounted for in the environmental models that quantify impacts and mitigation |
| EPA          | EPA-230             | Mitigation - Policy  | The DEIS does not adequately address the requirements of the Mitigation Rule for proposed preservation activities (40 CFR § 230.93(h)).  | Proposed preservation activities are discussed in Section 5.   |



| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|-----------------------------|---|--|
| EPA          | EPA-231             | Mitigation - Implementation | Preservation means the removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. | combined with EPA-232  |
| EPA          | EPA-232             | Mitigation - Implementation | Preservation does not result in a gain of aquatic resource area or functions.   | Net habitat/function provided on any type of mitigation, including preservation, is determined as the difference between future without mitigation in place and future with mitigation in place. Therefore, if a site is threatened by a future activity and mitigation preserves the site ( <i>i.e.</i> , removes the threat), then mitigation will result in a net gain over the future without mitigation aquatic resources and functions.  |
| EPA          | EPA-233             | Mitigation - Policy         | The mitigation rule requires that for preservation all several tests must be met (40 CFR § 230.93(h)).  | The Mitigation Rule allows for preservation specific circumstances. A discussion of those circumstances is found in Section 5.   |
| EPA          | EPA-234             | Mitigation - Implementation | A description of how each proposed parcel for preservation credits meets these requirements must be provided.   | Any preservation credit would be included in the preparation of detailed tract-specific mitigation plans (see Section 5).  |
| EPA          | EPA-235             | Mitigation - Policy         | The assessment of threats should include how the TSP will threaten existing wetlands through drainage and altered hydrology, and if it's possible for the proposed mitigation areas to meet test iv of 40 CFR § 230.93(h).  | Test iv of 40 CFR 230.93(H) refers to preservation and whether or not the resources are under threats of destruction or adverse modification. As stated in Section 5, the Bogle Woods tract was under threat of clearing for timber production. If a determination is made to proceed with the project, the gains in mitigation from preserving this tract would be quantified during the completion of the site-specific mitigation plan and coordinated with the interagency team. Following coordination, a determination would be made regarding the applicability of the site as preservation. If no longer desirable or cost effective, the tract would likely be transferred back to its original owner or heirs and timber likely removed, with a commensurate degrading of the site's ecological value. |

| Organization | Unique Identifier** | Theme(s)             | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|----------------------|---|---|
| EPA          | EPA-236             | Mitigation - Policy  | The standard practice for the Missouri IRT is to require preservation of 10 acres of land for every one acre of impact (10: 1 replacement ratio). HGM calculations should be also adjusted accordingly. | See EPA-138 regarding the utilization of ratios. If a determination is made to proceed with the project, the gains in mitigation from preserving this tract would be quantified during the completion of the site-specific mitigation plan and coordinated with the interagency team. Following coordination, a determination would be made regarding the applicability of the site as preservation. If no longer desirable or cost effective, the tract would likely be transferred back to its original owner or heirs and timber likely removed, with a commensurate degrading of the site's ecological value.   |
| EPA          | EPA-238             | monitoring           | If the project is going to use HGM to project mitigation needs then it should also use HGM to evaluate mitigation parcel success.   | The DEIS has been revised to include specific HGM monitoring.   |
| EPA          | EPA-239             | monitoring           | One of the ecological performance standards should be to meet the reference standard for each of the variables in the project area for each HGM class.  | The Corps does not anticipate that mitigation would result in reference standard wetlands. Thus, ecological performance standards are not based on reference standards. The definition of reference wetlands and standards is provided in the HGM Regional Guidebook (Appendix E, Part 5 at pp 9). Specific FCI values used to determine mitigation requirements are found in Appendix E, Part 6, Tables 28a and 28b. Estimated FCI used in mitigation are less than what would be expected for reference standard wetlands. Ecological performance standards are based on these estimates, not reference standards |
| EPA          | EPA-240             | wetlands             | The DEIS should define where and how the reference standard (HGM) was determined.   | Reference standards are defined and described in Appendix E, Part 5 (pg 9).   |
| EPA          | EPA-241             | Mitigation - Science | The DEIS needs to clarify (such as on page 323) if the mitigation plans will rely on natural revegetation rather than planting the sites.   | Trees would be established by utilizing a variety of techniques but could include direct seeding/acorns, seedlings, or natural regeneration. The species of trees as well as the appropriate establishment method would be described in the detailed tract-specific mitigation plan.  |

| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|-----------------------------|---|--|
| EPA          | EPA-242             | Mitigation - Policy         | Natural revegetation of sites generally is not ecologically feasible and is not a standard practice accepted by the Interagency Review Team.  | Recent literature indicates otherwise. See Mitsch et al. 2012. With the exception of batture land reforestation, the majority of vegetated wetland restoration sites will be planted with appropriate species of trees. Forest composition in the batture land includes pioneer species (black willow and cottonwood). Due to the rapid colonization of both of these pioneer species, there is no need to plant these areas. Instead, the Corps plans to restore the microtopography and site specific hydrologic restoration (plug ditches, remove farm drains, etc.). Vegetation will colonize naturally. |
| EPA          | EPA-243             | Mitigation - Implementation | The DEIS should specify the process for providing the Missouri Interagency Review Team with each site specific mitigation design with planting lists for review and approval.   | Section 5 of the DEIS has been revised that describes the process for the interagency team to review and comment on tract-specific mitigation plans.   |
| EPA          | EPA-244             | Mitigation - Implementation | Ecological performance standards need to be developed and included in the DEIS for vegetation diversity (number of species), number of strata, and percent cover appropriate for that vegetation type based on reference information. | The DEIS has been revised to include additional discussion on ecological performance standards.  |
| EPA          | EPA-245             | Mitigation - Implementation | The EPA recommends that the DEIS provide a process for all the agencies of the Missouri Interagency Review Team to review and approve the monitoring reports (page 323).  | Section 5 has been revised indicating that monitoring reports will be coordinated with the interagency team.   |
| EPA          | EPA-246             | Mitigation - Implementation | Annual Interagency Review Team mitigation site visits are recommended.  | Section 5 has been revised indicating that the interagency team can participate in monitoring.   |
| EPA          | EPA-247             | monitoring                  | The DEIS should clarify what is meant by "vegetation is established" and describe how will this be measured and what will the target be for each habitat type.  | The DEIS has been revised to include a discussion of vegetation diversity and percent coverage (see 5.5.9).  |
| EPA          | EPA-248             | monitoring                  | Each site plan must include specific vegetative diversity and cover standards to determine success.   | The DEIS has been revised. See section 5.5.9.  |

| Organization | Unique Identifier** | Theme(s)             | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|----------------------|---|--|
| EPA          | EPA-249             | Adaptive Management  | Page 330 indicates project adaptive management reports would be developed at 5, 15, 25 and 50 years. We would recommend planning for annual reporting periods in the early years during and after project construction until interim performance standards are met in order to more quickly identify and correct issues at their onset. | Phase 1 adaptive management has been revised to include annual reporting requirements for five years or until tract-specific ecological success has been demonstrated.                                 |
| EPA          | EPA-250             | uncertainty          | On page 298 the DEIS states does not define "risk register." It is unclear what role this will have in ecological performance standards.  | Risk is discussed in Section 6.  |
| EPA          | EPA-251             | Adaptive Management  | The DEIS does not adequately describe the adaptive management plan and uses concepts and terms that are not standard practice for the Missouri IRT (page ii).   | The Adaptive Management Plan has been clarified to explain concepts and terms used in the document.  |
| EPA          | EPA-252             | Mitigation - Science | The Mitigation Rule discusses adaptive management plans; however the DEIS is unclear what is meant by "adaptive mitigation strategy."   | The term "adaptive mitigation strategy" has been clarified in Section 5.   |
| EPA          | EPA-253             | Adaptive Management  | Page x, the DEIS recommends adaptive management to overcome any mitigation shortfalls as a result of uncertainty by utilizing future "monitoring point estimates" to determine if "adaptive management decision thresholds" have been met; but the DEIS does not describe these estimates or decision thresholds.                       | The DEIS has been revised. Point estimates are presented in Section 4 of the DEIS. Risk and uncertainty is discussed in Section 5. Adaptive management decisions (Phase 2) are discussed in Section 7. |

| Organization | Unique Identifier** | Theme(s)            | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|---------------------|--|--|
| EPA          | EPA-254             | Adaptive Management | The DEIS needs to define key terminology and provide sufficient detail to demonstrate that the adaptive management strategy sufficiently reduces risk such that the plan has a reasonable chance of success to offset impacts.   | The Adaptive Management Plan (both phases) has been further developed and refined to include more specific information where possible regarding the monitoring, assessment, performance measures, targets and thresholds that would trigger when an Adaptive Management Action.                                    |
| EPA          | EPA-255             | Adaptive Management | The processes for monitoring and calculating total adaptive management costs are not well documented. The document states on page ii, "In the event that future monitoring determines that there is a mitigation deficiency, operation of gates and pumps would be changed to reduce the environmental impacts of the project." Page 333 states "Any changes to the project operation must still be economically viable." The process and criteria for making these determinations is not described in the document and creates unacceptable risk. | Phase 2 AM will be clarified by explain the overall process of changing the operation plan of the project. Although benefits would be reduced and operating costs may be reduced (decrease days of pumping), there are no additional costs from changing project operation.  |
| EPA          | EPA-256             | Adaptive Management | If the monitoring shows that the gates need to be open year round to offset impacts, will that be acceptable to project sponsors and the operation of the Mississippi River and Tributaries Project?   | The TSP provides economic benefits of managing floods in the project area. Environmental impacts have been avoided and minimized by keeping gates open during portions of the year. The Corps is committed to adaptive management to ensure that project benefits are obtained and ecological impacts compensated. |
| EPA          | EPA-257             | Adaptive Management | The DEIS does not specify what assurances would be put in place that adaptive management would be conducted according to plan.   | The DEIS has been clarified by specifying the assurances. Assurances are based on the project's authorizations. The Corps will conduct adaptive management for the MRL item and the remaining cost will be cost shared with the non-federal sponsor.   |

| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|-----------------------------|--|--|
| EPA          | EPA-258             | Adaptive Management         | The Advance DEIS should be modified to include detailed description and logistics of the adaptive management plan and third party monitoring and oversight. For example, more information and clarity is needed at pages 13, 57-58, and 61.  | The DEIS has been clarified to provide additional details regarding adaptive management. Third party monitoring and oversight is not anticipated. Monitoring and adaptive management will be coordinated with the interagency team.                              |
| EPA          | EPA-259             | Adaptive Management         | Page 191, the DEIS states "Increases in rice production and the potential benefit to shorebirds would be monitored through adaptive management." The DEIS should clarify the functions provided by rice fields, how these functions are assessed, and how potential increase or decrease in function due to project activities might be incorporated into the comprehensive mitigation plan.                       | The discussion regarding rice acreage has been deleted.  |
| EPA          | EPA-260             | Mitigation - Implementation | The DEIS should be revised to clarify that site specific remedial actions will be necessary for each mitigation site whenever the site-specific performance criteria have not been met.  | The DEIS has been revised to clarify what will be necessary to trigger a remedial action. Since the project will be adaptively managed, this may include addressing mitigation adjustments on the site-specific area, or modifying the operation of the project. |
| EPA          | EPA-261             | Mitigation - Implementation | On page 333 the DEIS states "Remedial actions would only be necessary when a cumulative need was lacking, not a site-specific need." This implies that if a tract fails for one resource class, it will be counted towards another class. This is inconsistent with the requirements of the Mitigation Rule and would present extreme difficulties in tracking in-kind replacement for losses to Waters of the US. | The DEIS has been clarified. Remedial actions will be necessary in the event that the project does not compensate for project impacts.   |

| Organization | Unique Identifier** | Theme(s)             | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|----------------------|---|--|
| EPA          | EPA-262             | Mitigation - Policy  | Page xix: the DEIS states "As seen in the proposed mitigation measures, a holistic watershed approach to compensatory mitigation has been proposed." Based on the information provided to date, the DEIS does not represent a watershed approach as it is outlined in the Mitigation Rule (see 40 CFR 230.93(c)). | The DEIS has been revised to incorporate the information outlined in the Mitigation Rule.  |
| EPA          | EPA-263             | General              | The potential conflict between goals of the Lower Mississippi River Conservation Committee and the TSP should be addressed in the watershed context for the Mississippi River (page 271).   | The DEIS discusses project implementation relative to LMRCC. Furthermore during the public review period, the LMRCC will be provided the opportunity to provide comment.   |
| EPA          | EPA-264             | General              | Will the TSP impact efforts to improve fish and wildlife habitat and recreational opportunities on the River?   | It is anticipated that the conversion of agricultural land to bottomland hardwoods within the project area and the batture will increase the availability of scare bottomland hardwood spawning and rearing habitat to Mississippi River fish assemblages. Likewise, there will be secondary recreation and wildlife benefits as a result of the conversion.   |
| EPA          | EPA-265             | Mitigation - Science | How do the proposed mitigation activities fit within other watershed planning and improvement efforts?  | Large Scale Ecosystem Restoration Initiatives are discussed in the cumulative impacts section.<br>USACE has recently completed the Lower Mississippi River Resource Assessment reconnaissance level report. A watershed study is being considered that would look for opportunities to restore habitat within and along the Mississippi River. Compensatory mitigation as a result of the St. Johns Bayou and New Madrid Floodway Project could be used to complement this potential project. Large scale restoration in the project area is not likely in the future because of the existing highly productive farmland. Future demands on agriculture products would cause a higher demand on existing agricultural areas like the St. Johns Bayou Basin and New Madrid Floodway. Therefore, a greater emphasis on agriculture than environmental restoration in the project area would be likely. |



| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|-----------------------------|---|--|
| EPA          | EPA-266             | Mitigation - Costs          | The costs of mitigation are not adequately assessed, and leave many factors undetermined. Thus the cost/benefit ratio cannot be fully determined.   | The DEIS has been revised to include project cost estimates.   |
| EPA          | EPA-237             | monitoring                  | Page 322: Table 6.5 provides a list of monitoring requirements. The table does not appear to use the HGM variables.   | The DEIS has been revised to include HGM variables in the applicable locations.  |
| EPA          | EPA-267             | Mitigation - Costs          | The DEIS should clearly outline how mitigation costs were derived and these costs should be specified when comparing alternatives (Table 2.6).  | The DEIS has been revised to include project cost estimates.   |
| EPA          | EPA-268             | Mitigation - Costs          | Mitigation costs are not fully accounted for in the economic analysis.  | The DEIS has been revised to include project cost estimates.   |
| EPA          | EPA-269             | Mitigation - Costs          | The difference between property value of cropland and woodland is the only cost included in the discussion. However, once an area is set aside from mitigation its property value may be different due the requirements of the conservation easement. | The economics appendix contains a discussion regarding the difference between a financial cost and an economic cost. This includes a discussion on the value of cropland versus the value of forest land and why only the difference is included as an economic cost of the project. |
| EPA          | EPA-270             | Mitigation - Costs          | The costs of monitoring, maintenance, management and protection into perpetuity are not accounted for.  | The DEIS has been revised to include project cost estimates.   |
| EPA          | EPA-271             | Mitigation - Costs          | Other types of mitigation costs beyond woodland planting are not mentioned, including: stream mitigation, borrow pit construction, wetland planting, legal fees, and engineering design for water control structures.                                 | The DEIS has been revised to include project cost estimates.   |
| EPA          | EPA-272             | Mitigation - Implementation | Information is lacking on what species would be planted at sites or over how many acres.  | Section 5 has been revised clarifying that tree species would not be finalized until the tract-specific plans are developed.   |

| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|-----------------------------|--|--|
| EPA          | EPA-273             | Mitigation - Implementation | There is also no indication of seeding rate or planting spacing which could dramatically change mitigation costs.  | Section 2.3.2 states that trees would be planted utilizing a variety of techniques but could include direct seeding/acorns, seedlings, or natural regeneration. The species of trees as well as the appropriate planting method would be described in the detailed tract-specific mitigation plan. For the purpose of determining planting costs, the Corps assumed \$450 per acre. Please note that this does not include other associated costs of mitigation (i.e. land acquisition). The DEIS has been revised to include mitigation cost estimates. |
| EPA          | EPA-274             | Mitigation - Costs          | Additionally, page 333, the DEIS states "a 25% contingency has been added to the calculated cost of mitigation features." What is this cost, and where is it documented in the DEIS?                             | The DEIS has been revised to include project cost estimates. The 25% contingency has been applied to the cost of real estate in the event that additional lands are required and the cost of mitigation measures in the event that monitoring requires additional work.  |
| EPA          | EPA-275             | Mitigation - Costs          | The DEIS underestimated the cost of mitigation, which would alter the cost benefit ratios for the alternatives.  | The DEIS has been revised to include project cost estimates.   |
| EPA          | EPA-276             | Mitigation - Costs          | It is unclear in the DEIS what mitigation costs were included in the economics assessment.   | The economics appendix includes a discussion on the difference between a financial cost and an economic cost.  |
| EPA          | EPA-277             | Mitigation - Costs          | In Appendix B, page 26, two figures are provided: \$40,358,000 is estimated for reforestation cost, but this section also indicates only \$16,915,000 of that cost was incorporated in the economics assessment. | Appendix B has been clarified. Only the economic costs, not financial costs are used in the determination of the project's net economic benefits.  |

| Organization | Unique Identifier** | Theme(s)             | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|----------------------|---|---|
| EPA          | EPA-278             | Mitigation - Costs   | As a routine part of the mitigation plan review process, the EPA reviews potential mitigation costs in order to determine if a mitigation provider has fully accounted for all potential costs and to evaluate feasibility of the plan. Based on information provided in the Advance DEIS and known mitigation costs in Missouri, the EPA estimated mitigation costs for the TSP. Based on our estimate, and the absence of several types of mitigation costs in the Advance DEIS, the EPA estimates mitigation costs have been significantly underestimated. | The DEIS has been revised to include project cost estimates.  |
| EPA          | EPA-279             | Mitigation - Science | Page xx, and Page 49: the document discusses "ecologically designed borrow pits and floodplain lakes," and page 147, Table 4.29 states that 194 acres of wetland function will be provided by borrow pits. The EPA disagrees that borrow pits will replace lost functions of area wetlands.   | The Phase 1 IEPR panel stated, "Borrow pits may have the most potential of becoming and staying as wetlands for a very long duration as they fill with sediments and organic matter. If half of them are 3 ft deep or less, they can be designed with littoral zones for vegetation and contribute significantly to biodiversity. Ecological engineering help to design these ponds appropriately is needed." Thus the Corps intends to ecologically design the borrow pits. The design is discussed in Section 5. Borrow pits would be designed so that half of each pit would have an average depth of less three feet. Wetland vegetation is expected. Thus, wetland benefits were quantified for half of the surface acreage. |
| EPA          | EPA-280             | Mitigation - Science | While these (borrow pits) may be appropriate to offset some impacts to fisheries, they are not acceptable mitigation for vegetated wetlands.  | Ecologically designed borrow pits provide benefits to the connected depression wetland sub-class (see Tables 4.29 and 4.34). The majority of wetland impacts occur to low gradient riverine backwater and overbank wetlands. Although, the ecologically designed borrow pits compensate for impacts to fish and wildlife resources (fish, waterfowl, etc), the only wetland impacts they compensate for are connected depression wetland sub-classes.   |
| EPA          | EPA-281             | Mitigation - Science | The depth of the pits (borrow) would provide only open water habitat because the depth of the water will not allow emergent plant growth.   | As stated, half of each pit would have an average depth of three feet. Emergent wetland vegetation is anticipated. The remaining half would have an average depth of six feet. Vegetation is not anticipated in the deeper areas. Thus, wetland benefits were only quantified for the shallower portions of the ecologically designed borrow pits.  |

| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|-----------------------------|--|---|
| EPA          | EPA-282             | Mitigation - Science        | These areas (borrow pits) should be removed from wetland acreage and functional assessments.   | A watershed approach has been utilized to quantify impacts of the project as well as mitigation benefits. Although the ecologically designed borrow pits will primarily compensate for impacts to fish, they still provide a wetland function. Thus, the DEIS quantifies the wetland value.   |
| EPA          | EPA-283             | Mitigation - Science        | The EPA and other agencies have commented previously that mitigation in the batture land would not adequately compensate for wetland losses due to the TSP.  | Previous comments are noted. However, subject matter experts that conducted the project specific analyses have indicated that batture land is suitable for mitigation. The Corps consulted with the Independent External Peer Review Panel to get an unbiased opinion from nationally recognized experts. The panel also indicated that batture land is suitable for mitigation (see Phase 2 IEPR Comment 3 and 4 and Phase 3 Comment 9). |
| EPA          | EPA-284             | Mitigation - Science        | This land is already connected to Mississippi River and subject to the flood pulse, and much of the area is already wetland. Therefore, mitigation in the batture will not increase functions related to the flood pulse, which is the most difficult aspect of the project to mitigate. | As previously stated, impacts and mitigation are expressed as habitat/function units and are based on the flood pulse and underlying land use. See EPA-195.   |
| EPA          | EPA-285             | Mitigation - Science        | These areas (batture) would also likely not be appropriate for preservation credits under the Mitigation Rule because they are under no threat for development.  | The Corps does not intend to preserve agricultural land in the batture land as part of mitigation. Instead, the Corps will restore bottomland hardwoods and riverfront forests on agricultural land in the batture land. These lands were previously forested and were converted to agriculture.  |
| EPA          | EPA-286             | Mitigation - Implementation | The DEIS should clarify if batture lands have already been purchased for the purposes of mitigation of this project. If not, how has it been determined that all these lands are available for mitigation?   | No lands have been previously acquired from the batture. The Corps made a determination that batture lands would be available based on the following: (1) Willing sellers identified themselves when the Corps was previously acquiring mitigation sites for this project and (2) discussion with the local sponsor and other stakeholders have identified potential batture locations.   |
| EPA          | EPA-287             | Mitigation - Science        | The DEIS needs to provide more information on the current status of these lands, including, a breakdown of which lands are located in the state of Missouri.   | The DEIS has been clarified to state that proposed mitigation sites located within the batture area will only be obtained in the State of Missouri.   |

| Organization | Unique Identifier** | Theme(s)             | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|----------------------|---|---|
| EPA          | EPA-288             | Mitigation - Science | More information should be provided regarding the functional losses proposed activities in the batture are intended to replace and which regulatory requirements will be satisfied.   | Section 5 provides an overview of anticipated mitigation benefits from restoration activities in the batture land. Technical resource specific discussion is found in the applicable sub-section of Section 4 and their applicable appendices.  |
| EPA          | EPA-289             | Mitigation - Science | Page xx: the document states that batture land lakes are degraded due to the high sediment load in the Mississippi River. Would other areas of the batture also be degraded?  | Yes. Conversion to cropland has degraded the habitat value of the batture land. Thus, mitigation is targeting restoration of forested areas on cropland to restore habitat/function.  |
| EPA          | EPA-290             | Mitigation - Science | The DEIS needs to include a discussion of the ecological feasibility and suitability of restoring these lanqs given these conditions.   | Section 5 provides a discussion on the ecological feasibility and suitability of conducting mitigation in the batture lands.  |
| EPA          | EPA-291             | Mitigation - Policy  | Use of State land (MDC Ten Mile Pond Conservation Area and Big Oak Tree State Park) as mitigation may not be compliant with 40 C.F.R. § 230.93(a)(3) because these lands are a part of "public programs already planned or in place." | CFR 230.93(a)(3) states, "(3) Compensatory mitigation projects may be sited on public or private lands. Credits for compensatory mitigation projects on public land must be based solely on aquatic resource functions provided by the compensatory mitigation project, over and above those provided by public programs already planned or in place. All compensatory mitigation projects must comply with the standards in this part, if they are to be used to provide compensatory mitigation for activities authorized by DA permits, regardless of whether they are sited on public or private lands and whether the sponsor is a governmental or private entity." Additionally, the project's authorization includes specific language directing it to take fish and wildlife credit for certain additions to Ten Mile Pond Conservation as mitigation, which is discussed in the EIS. |
| EPA          | EPA-292             | Mitigation - Policy  | Also, these lands (TMPCA) may not meet 40 C.F.R. § 230.92(h) requirements for preservation.   | See EPA 291   |

| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|-----------------------------|---|--|
| EPA          | EPA-293             | Mitigation - Policy         | EPA observes that the brief citation included on page 301 to the Congressional Authorization allowing for use of Ten Mile Pond for mitigation is specific only to fish and wildlife protection. See discussion in the preliminary DEIS in Section 2.3.5.            | Credits from Ten Mile Pond will only be taken for fish and wildlife impacts.   |
| EPA          | EPA-294             | Mitigation - Policy         | The Water Resources Development Act of 1986 states that mitigation lands must be acquired from willing sellers. The DEIS does not detail if MDC is a willing seller or will participate in mitigation activities for these lands.                                   | Ten Mile Pond will not be acquired from the State of Missouri. Pursuant to the project's authorization, lands purchased by the State of Missouri within the Ten Mile Pond Conservation area will only be counted as part of the project's overall mitigation needs. Furthermore, the State of Missouri will maintain such lands. |
| EPA          | EPA-295             | Mitigation - Policy         | Page xix, the proposed mitigation at existing areas of 10 Mile Pond do not meet the test for preservation under the Mitigation Rule and therefore could not receive mitigation credits for CWA Section 404 compliance.  | See EPA 291  |
| EPA          | EPA-296             | Mitigation - Implementation | Section 1.3.2, page 5: Identifies BOTSP as a priority for mitigation. However, mitigation priorities must be generated from a comprehensive mitigation plan that includes a watershed approach for identifying the most desirable sites for restoration activities. | The watershed approach is presented in Section 5.  |
| EPA          | EPA-297             | Mitigation - Implementation | Siting of restoration parcels (BOTSP) has not been discussed in the context of the watershed.   | Location of mitigation sites and zones in the project area are based on post-project flood frequencies (see Section 5).  |
| EPA          | EPA-298             | Mitigation - Implementation | The DEIS does not provide a clear description of how and by whom the park (BOTSP) and associated mitigation lands will be managed in the future.  | The DEIS has been revised to provide additional description regarding Big Oak Tree State Park.   |
| EPA          | EPA-299             | Mitigation - Implementation | Who will own the land (BOTSP) and provide long term management, maintenance, and financial assurances?  | Long-term management and financial assurances are discussed in Section 5.  |

| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|-----------------------------|---|--|
| EPA          | EPA-300             | Mitigation - Implementation | The mitigation plan needs to provide an agreement between the state and the USACE for management of these lands as well as everything required by the Mitigation Rule (40 CFR §230.94), including: performance standards, financial assurances, ownership, site protections, and long-term stewardship. | The Corps of Engineers has entered into a Memorandum of Understanding for mitigation associated with Big Oak Tree State Park. Section 5 will be revised to clarify performance standards, financial assurances, ownership site protections, and long-term stewardship.   |
| EPA          | EPA-301             | Mitigation - Science        | The DEIS describes proposed activities at BOTSP as "restoring" hydrology. However, the proposed work may be more accurately described as enhancement of hydrology.  | Constructing a culvert in the Mainline levee to reconnect Big Oak Tree State Park to the Mississippi River is restoration, not enhancement. The Interagency Workgroup on Wetland Restoration (NOAA, EPA, USACE), defines enhancement as increasing one or more of the functions performed by an existing wetland beyond what currently or previously existed in the wetland. There is often an accompanying decrease in other functions. Whereas restoration is defined as returning a degraded wetland or former wetland to pre-existing condition or as close to that condition as possible. The restored flood pulse to Big Oak Tree State Park would inundate the park and mimic a flood regime as if the levees had not been constructed. |
| EPA          | EPA-302             | Mitigation - Science        | The proposed work (BOTSP) is highly engineered and susceptible to failure or high maintenance and management costs.   | The Corps acknowledges that engineering is required to restore hydrology to the park. Since the structure will be located within the Mississippi Mainline Levee system, it will be designed, monitored, and inspected in a consistent manner to other items and structures located within the comprehensive levee system. Since the structure relies on gravity, operation costs only consist of opening and closing the structures. With the exception of routine maintenance provided by the project sponsor, the Federal government would be responsible for maintaining the structure (See DESI Section 5).  |
| EPA          | EPA-303             | Mitigation - Science        | Some areas (BOTSP) that are currently wetland may change class or be converted to open water if the water control structure and/or regime are operated incorrectly.   | Since the park is experiencing drier conditions, restoration will result in wetter conditions that occurred prior to alteration. This is a goal of the restoration. Continued coordination with the Missouri Department of Natural Resources will take place to ensure that the structure is operated correctly.   |



| Organization | Unique Identifier** | Theme(s)             | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|----------------------|---|---|
| EPA          | EPA-304             | Mitigation - Science | Additional description and design parameters of the controlled water levels are needed to determine technical and ecological feasibility of the proposed activities (BOTSP).  | Section 5 has been revised to include additional details regarding the hydrologic restoration feature. Similar to other construction items, detailed plans and specifications will not be developed until after the Record of Decision. |
| EPA          | EPA-305             | Mitigation - Science | The DEIS should clearly describe the proposed water control structure operations for BOTSP and other mitigation lands. This information cannot be deferred until the Record of Decision, as implied on page 47, as it is crucial to determining net benefit of proposed mitigation.   | see EPA 304   |
| EPA          | EPA-306             | Mitigation - Science | The EPA is a strong proponent of efforts to restore more natural hydrology to floodplain areas cut off from the Mississippi River by the Corps' Mississippi River and Tributaries Project features.   | Comment noted.  |
| EPA          | EPA-307             | Mitigation - Policy  | Our recent understanding from experience with similar efforts in coastal Louisiana is that such modifications to the Mississippi Mainline Levee would elicit the need for authorization pursuant to Section 408 of the Rivers and Harbors Act. It is not clear from the DEIS whether that is the case and, if so, whether this has been addressed for purposes of this proposed mitigation feature. | Restoring hydrology to Big Oak Tree State Park will not impair the usefulness of the levee. Likewise, it will not result in the inadvertent flooding of properties that are not acquired for mitigation.                                |
| EPA          | EPA-308             | Mitigation - Science | Proposed stream and wetlands mitigation is lacking documentation and does not address several previous comments provided by the EPA, including comments regarding technical and ecological feasibility of planned activities.   | Mitigation proposed to compensate for impacts to ditches have been revised. Likewise, Section 5 has been revised based on comments received from EPA and the Fish and Wildlife Service.   |

| Organization | Unique Identifier** | Theme(s)            | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|---------------------|--|---|
| EPA          | EPA-309             | Mitigation - Policy | Additionally, the preliminary DEIS does not appear to follow processes outlined in the Mitigation Rule or contain all the elements of a mitigation plan required under 40 CFR § 230.94(c).   | See EPA 206.  |
| EPA          | EPA-310             | ditch impacts       | The description of stream mitigation activities is incomplete and is not sufficient to determine if impacts have been adequately assessed and if proposed mitigation activities will adequately compensate for losses.                                 | The ditch impact and mitigation section has been revised to include additional specifics regarding ditch impacts and mitigation activities.   |
| EPA          | EPA-311             | Mitigation - Policy | Detailed maps of areas of proposed mitigation areas with type of mitigation activity are needed.   | The DEIS provides figures of proposed mitigation zones. Specific tracts would be acquired from these zones and mitigation options for each zone are described in Sections 2.3.1 to 2.3.8.   |
| EPA          | EPA-312             | ditch impacts       | The worksheets provided in Appendix P Part 2 and 3 do not describe what each of the dominant impacts and net benefits are, or how the value for each of the factors was chosen.  | Additional clarification has been provided to the worksheets and the DEIS has been revised accordingly.   |
| EPA          | EPA-313             | ditch impacts       | Additionally, it appears that not all of the impacts (ditches) are accounted for in the worksheets. Adding up the linear feet in the adverse impact sheet equals 15.35 miles, however the DEIS describes on page xvi that 23.1 miles will be impacted. | Following interagency team guidance, the Corps' project team consulted with the Memphis District USACE Regulatory Branch to determine the construction reaches along project area ditches that would trigger the MSMM. The Regulatory Branch concluded that the proposed activity along the upper 7.8 miles of St. James Ditch would not be considered an impact as bottom widths would remain unchanged. The reach, however, should be a target location for mitigation as the ditch is commonly planted and farmed to top bank. The EIS has been clarified. |

| Organization | Unique Identifier** | Theme(s)      | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|---------------|--|--|
| EPA          | EPA-314             | ditch impacts | The EPA and other IRT agencies have previously commented that forested buffers should be used instead of grass buffers.  | Due to future maintenance activities that require a construction right of way along the top bank of project area ditches, it is impractical to place a forested buffer on both sides of the channel. Thus, warm season grasses are recommended on one side because they are conducive to future maintenance activities and there is a wealth of scientific data that recommends their use for water quality benefits. Therefore, warm season grasses are still proposed on one side of the channel. However, the DEIS was revised to remove the mitigation credit previously determined for the grass buffer. The DEIS has been revised to state that "Although USACE would ensure buffer strips are established on both banks, credit will only be taken for woody vegetation, therefore, grass buffers will be planted and maintained as an environmental design feature." |
| EPA          | EPA-315             | ditch impacts | Grassed buffers, and any buffers placed upon spoil piles, would not be provided mitigation credits because they do not provide in-kind replacement of functional losses for the environmental setting.   | See EPA 317 and EPA 314.   |
| EPA          | EPA-316             | ditch impacts | Additionally, any buffers that will be impacted in the future during maintenance activities would not receive mitigation credits because the Mitigation Rule requires that mitigation areas be protected in perpetuity.  | The DEIS has been revised to state "However, as previously stated, due to interagency team concerns of the grass buffer being used as access to periodically maintain agricultural ditches in the project area, the grass buffer will be implemented as an environmental design feature and no mitigation credit will be taken through the MSMM."  |
| EPA          | EPA-317             | ditch impacts | The document, page 34, states that areas would be allowed to revegetate naturally. The IRT requires that stream buffers be planted with the appropriate density and species composition of trees and understory plants.  | The DEIS has been revised to state that the spoil pile would be allowed to revegetate naturally, providing many ecological benefits, however, no mitigation credit will be offered as this will be done as a an environmental design feature.  |
| EPA          | EPA-318             | ditch impacts | The EPA provided comments outlining several factors that should be considered to determine if proposed riparian buffers are appropriate. Credit for riparian buffers on only one side of a stream is not recommended unless a net benefit can be demonstrated. | The DEIS has been revised. A net benefit has been demonstrated by the utilization of the MSMM.   |

| Organization | Unique Identifier** | Theme(s)      | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|---------------|--|---|
| EPA          | EPA-319             | ditch impacts | The DEIS should include discussion of factors such as orientation of the buffers to provide shading, how on-going channel maintenance might impact the mitigation resource, if there are more appropriate areas in the watershed for stream mitigation, and opportunities for enhancing streams utilizing Natural Stream Channel Design.   | The DEIS has been revised to include additional discussion regarding ditch impacts and appropriate mitigation.  |
| EPA          | EPA-320             | ditch impacts | The DEIS must clearly describe how revetment and culvert replacement activities have been included in the assessment. The EPA has previously commented that placement of hard structures in streams, such as these proposed activities, are considered to be impacts rather than enhancements and should be included in the assessment of debits; however it is unclear if these changes have been made. | Direct footprints of hard points have been included in the impact assessment, and the benefits from establishment of the nine transverse dikes were also calculated as a benefit for the ditch reach. |
| EPA          | EPA-321             | ditch impacts | Page 239: it is unclear in the DEIS how stream credits for borrow pits created near streams will be determined.  | The DEIS has been revised documenting how credits were determined.  |
| EPA          | EPA-322             | wetlands      | The EPA notes that the preliminary DEIS contains confusing and perhaps unnecessary statements regarding Clean Water Act (CWA) jurisdiction that may prove unhelpful to the public.   | Issue has been clarified in DEIS, see revised write up. Only the Corps definition of wetlands is presented.   |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|----------|--|--|
| EPA          | EPA-323             | wetlands | The Advance DEIS states on page 95, "Wetlands that are potentially regulated by the Clean Water Act are indicated in Bold Calibri Font to distinguish the different wetland terminology used by others." We recommend that language used in regard to CWA jurisdiction throughout the draft document be reviewed for clarity and revised as necessary. | Issue has been clarified in DEIS, see revised write up. Only the Corps definition of wetlands is presented.  |
| EPA          | EPA-324             | wetlands | Clarity could be added to the DEIS by outlining the role and responsibility of the resource agencies and clearly citing the regulations and sources of definitions.  | Issue has been clarified in DEIS, see revised write up. Only the Corps definition of wetlands is presented.  |
| EPA          | EPA-325             | wetlands | Providing the USACE Jurisdictional Determinations, as well as a discussion of normal procedures for conducting JDs and how the DEIS followed those procedures, would help clarify this issue.  | Preliminary JDs are not warranted. Due to the fact that the project assumed that all naturally vegetated areas located at and below the pre-project five-year flood frequency elevation were wetlands, vegetated areas were not assessed as the only possible outcome would be that fewer acres would be classified as wetlands. Thus, the project assumes a worst case scenario for impacts so the project is inherently in compliance with the Clean Water Act. Furthermore, in the absence of evidence to the contrary, the Corps of Engineers generally accepts the NRCS farmed wetland and prior converted cropland determinations for land that is devoted to agricultural use. Coordination with the Memphis District Regulatory Branch concluded the NRCS determination represents the best available information regarding the extent of farmed wetland and prior converted cropland within the project area. Although formal jurisdictional wetland determinations were not conducted, the analysis conducted is more than adequate to demonstrate compliance with Section 404 of the Clean Water Act. |
| EPA          | EPA-326             | wetlands | In the DEIS the distinction between the definition of wetlands and the definition of Waters of the U.S. should be clarified.   | Issue has been clarified in DEIS, see revised write up.  |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|----------|--|--|
| EPA          | EPA-327             | wetlands | To date, Jurisdictional Determinations have not been provided by USACE describing Waters of the United States in text and with maps, and the NRCS wetland determination report and methodology for farmed wetlands and prior converted cropland under the Food Security Act have not been included.                    | Preliminary JDs are not warranted. Due to the fact that the project assumed that all naturally vegetated areas located at and below the pre-project five-year flood frequency elevation were wetlands, vegetated areas were not assessed as the only possible outcome would be that fewer acres would be classified as wetlands. Thus, the project assumes a worst case scenario for impacts so the project is inherently in compliance with the Clean Water Act. Furthermore, in the absence of evidence to the contrary, the Corps of Engineers generally accepts the NRCS farmed wetland and prior converted cropland determinations for land that is devoted to agricultural use. Coordination with the Memphis District Regulatory Branch concluded the NRCS determination represents the best available information regarding the extent of farmed wetland and prior converted cropland within the project area. Although formal jurisdictional wetland determinations were not conducted, the analysis conducted is more than adequate to demonstrate compliance with Section 404 of the Clean Water Act. |
| EPA          | EPA-328             | wetlands | This information (USACE JD and NRCS Data) is essential to determining impacts to Water of the US and its exclusion will also present difficulties in identifying wetlands during project implementation for the purposes of 1) avoiding impacts during construction, operation, and maintenance of project activities; | Preliminary JDs are not warranted. Due to the fact that the project assumed that all naturally vegetated areas located at and below the pre-project five-year flood frequency elevation were wetlands, vegetated areas were not assessed as the only possible outcome would be that fewer acres would be classified as wetlands. Thus, the project assumes a worst case scenario for impacts so the project is inherently in compliance with the Clean Water Act. Furthermore, in the absence of evidence to the contrary, the Corps of Engineers generally accepts the NRCS farmed wetland and prior converted cropland determinations for land that is devoted to agricultural use. Coordination with the Memphis District Regulatory Branch concluded the NRCS determination represents the best available information regarding the extent of farmed wetland and prior converted cropland within the project area. Although formal jurisdictional wetland determinations were not conducted, the analysis conducted is more than adequate to demonstrate compliance with Section 404 of the Clean Water Act. |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|----------|--|--|
| EPA          | EPA-329             | wetlands | This information (USACE JD and NRCS Data) is essential to determining impacts to Water of the US and its exclusion will also present difficulties in identifying wetlands during project implementation for the purposes of 2) placing borrow pits and other proposed activities in PCC lands. | Preliminary JDs are not warranted. Due to the fact that the project assumed that all naturally vegetated areas located at and below the pre-project five-year flood frequency elevation were wetlands, vegetated areas were not assessed as the only possible outcome would be that fewer acres would be classified as wetlands. Thus, the project assumes a worst case scenario for impacts so the project is inherently in compliance with the Clean Water Act. Furthermore, in the absence of evidence to the contrary, the Corps of Engineers generally accepts the NRCS farmed wetland and prior converted cropland determinations for land that is devoted to agricultural use. Coordination with the Memphis District Regulatory Branch concluded the NRCS determination represents the best available information regarding the extent of farmed wetland and prior converted cropland within the project area. Although formal jurisdictional wetland determinations were not conducted, the analysis conducted is more than adequate to demonstrate compliance with Section 404 of the Clean Water Act. |
| EPA          | EPA-330             | wetlands | The Introduction on pg xx indicates that the TSP will use 1,800 acres of PCC for restoration, but no information is provided on how these lands will be identified.  | The DEIS has been revised. Land acquisition and mitigation implementation is discussed in Section 5.   |
| EPA          | EPA-331             | WRP      | Page 114-116, the methodology for determining future Wetland Reserve Program participation does not appear to have considered impacts of the TSP and likely results in an overestimate of acreage.   | Methodology used to determine future WRP was developed in accordance with IEPR recommendations (see comment response to EPA-131). The future with and without project condition includes estimated changes in WRP lands. Hydrologic changes resulting from the TSP to WRP (existing and future projections) were considered in the environmental models and mitigation is proposed to compensate for the impact.   |



| Organization | Unique Identifier** | Theme(s)   | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|------------|---|--|
| EPA          | EPA-332             | WRP        | With the TSP in place, the area would be drier, it would be more difficult to provide the appropriate hydrology to restore sites resulting in fewer acres restored, and there would be fewer economic drivers for restoring wetlands. | NRCS data show that 5,800 acres of cropland have been enrolled in the WRP within the project area. Of this total, 77% are in the St. Johns Bayou Basin. If flood frequency was the only driver for WRP conversion, a greater percentage of enrollments would be located in the New Madrid Floodway since flooding is more frequent due to the 1,500-foot gap. Likewise, a greater percentage of enrollments would occur at lower elevations since these lands flood more frequently and for longer durations. However, the greatest percentage of WRP lands occur at higher elevations in the St. Johns Bayou Basin located to the north of Highway 80 (see Appendix M, Part 1, Figure 2). This area is not flooded as frequently or for as long durations as lands located closer to the structure. Based on discussions with the project sponsor, WRP enrollment is correlated to duck hunting opportunities. Lands at the lowest elevations cannot be accessed. Thus, landowners enroll lands at higher elevations (L. Bock, St. John Levee and Drainage District, personal communication). |
| EPA          | EPA-333             | WRP        | Existing WRP sites will be degraded due to lack of water and/or altered hydrology.  | The Corps considered all existing WRP sites and future projections under the without project condition as functioning habitat. Thus, the hydrologic changes to these areas as a result of the project were considered in the environmental models and mitigation is proposed to compensate for the impact. The Corps considers this a conservative assessment since a portion of the WRP sites visited by EPA/Corps field teams were being actively managed by the utilization of perimeter levees, water control structures, and groundwater pumps.   |
| EPA          | EPA-334             | WRP        | Has the NRCS provided an assessment on TSP impacts to WRP sites, their potential degradation over time, and how this may impact the NRCS and landowners' ability to meet program requirements?  | All assumptions, methodology, and resulting timeline were coordinated with and reviewed by NRCS. NRCS will also be furnished a copy of the DEIS for comment.   |
| EPA          | EPA-335             | 2011 Flood | The Advance DEIS does not appear to adequately consider implications of the 2011 flood or future activation of the New Madrid Flood way in evaluating alternatives in Section 2.0.  | The DEIS has been clarified in that all alternatives consider and allow for future Floodway activation. Under all alternatives, the Birds Point-New Madrid Floodway would continue to operate as currently authorized.   |

| Organization | Unique Identifier** | Theme(s)   | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|------------|--|---|
| EPA          | EPA-336             | 2011 Flood | The EPA recommended in September 2011 that the DEIS include an assessment of the impacts of the 2011 activation of the floodway (on social, cultural and natural resources and infrastructure) and resulting implications on this project. | Detailed information regarding the flood of 2011, including activation of the floodway, resource impacts and the ongoing flood recovery efforts, can be found in Appendix L (2011 Post Flood Report). USACE is currently unaware of any implications to the SJNM project resulting from activation of the floodway. |
| EPA          | EPA-336             | 2011 Flood | The EPA recommended in September 2011 that the DEIS include an assessment of the impacts of the 2011 activation of the floodway (on social, cultural and natural resources and infrastructure) and resulting implications on this project. | Detailed information regarding the flood of 2011, including activation of the floodway, resource impacts and the ongoing flood recovery efforts, can be found in Appendix L (2011 Post Flood Report). USACE is currently unaware of any implications to the SJNM project resulting from activation of the floodway. |
| EPA          | EPA-338             | 2011 Flood | The DEIS does not appear to include information concerning the operation of the floodway in 2011 and the potential for operating it again in the future if the project is implemented.   | Additional information regarding future Floodway activation can be found in Section 4.17.2. The Floodway would continue to be operated as authorized for all alternatives. Detailed information on the 2011 flood can be found in Appendix L, 2011 post flood report.   |
| EPA          | EPA-339             | 2011 Flood | Damages and shifts in population as a result of the 2011 floods were not described in the Sections that discuss need for action.   | EIS has been revised to describe shifts in population   |
| EPA          | EPA-340             | 2011 Flood | It is not clear if alternatives were analyzed based on their ability to reduce damages in the event of activation of the floodway.   | Alternatives were not analyzed based on their ability to reduce damages in the event of floodway activation. Current authorization calls for floodway operation with the 1,500-gap closure levee constructed.   |

| Organization | Unique Identifier** | Theme(s)   | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|------------|---|---|
| EPA          | EPA-341             | 2011 Flood | Assessment of the 2011 activation of the floodway provides current information on the costs of repairs to the levee system the government will realize for rebuilding. This information should be used to determine the costs for rebuilding post-project for each alternative, including what the additional cost would be to repair two levee breaches (inlet and outlet) should the levee gap be closed. | The cost for future activation of the floodway and associated levee repairs is the same across all alternatives. Please note that there are three crevasses, one inflow and two inflow/outflow.   |
| EPA          | EPA-342             | 2011 Flood | The DEIS states that estimates regarding frequency of floodway operation are based on past frequency of operation. This may be insufficient to provide a basis for analysis of future operations due to changes in land use in the watershed and the affects of climate change.   | The phase 3 IEPR (Volume 3, Part 4) review panel concurred with the USACE methodology to use the period of record to establish and evaluate future H & H conditions (including flood regimes). Details on the potential for land use changes and effects of climate change are discussed in Section 4.19, Cumulative Impacts. The conclusions discussed in Section 4.19 can similarly be used in regards to future operation of the floodway. Operation of the floodway and associated flood recovery efforts would continue at the levels authorized by Congress. Because the floodway closure will not affect hydrology upstream of the closure, there is not expected to be an increase in how often the floodway will be operated post-project. |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|----------|---|---|
| EPA          | EPA-342             | Flooding | The DEIS states that estimates regarding frequency of floodway operation are based on past frequency of operation. This may be insufficient to provide a basis for analysis of future operations due to changes in land use in the watershed and the affects of climate change. | <p>The operation of the Floodway is currently estimated to have a 1.25 percent chance of annual occurrence, the level of occurrence used for the DEIS. Closure of the 1500-foot gap at the lower end of the New Madrid Floodway will have no effect on the timing and frequency of operation of the New Madrid Floodway. Also, no reliable climate change trends have been established that would require revision of the currently estimated frequency of operation of the New Madrid Floodway.</p> <p>The Project Design Flood (PDF) for the Lower Mississippi River is detailed in House Document No. 308 of the 88th Congress, 2d Session, Mississippi River and Tributaries Project, Volume II, Annex C - Project Design Flood Study. The development of the PDF included a review of about 35 different storm combinations. The 13 most likely combinations were selected for preliminary study based on the floods produced on the Lower Mississippi River. The tributary storms of the various combinations were arranged in meteorologically feasible sequences that would cause the resulting peak flows to coincide as nearly as practicable at key discharge stations of the Mississippi River. The resulting runoffs from the storm combinations were called hypo floods. Four storm combinations were selected for detailed study. The storm combinations were considered plausible from a meteorological viewpoint and to have a reasonable probability of occurrence, judging from past flood and storm sequences; a possibility was recognized that the occurrence of unusual combinations of meteorological and hydrological events could produce a flood of a larger magnitude than any of the four selected hypo floods but the occurrence of such a sequence would be considered very rare. On the basis of the study, Hypo-Flood 58A, which produced the maximum unregulated and regulated peak flows at all key stations on the Lower Mississippi River, with Group EN reservoirs operating was adopted as the PDF for the Lower Mississippi River. Hypo-Flood 58A consists of the combination of one storm as it actually occurred increased by ten percent, one storm as it actually occurred, and one transposed storm. Hypo-Flood 58A is described as follows: The actual 6-24 January 1937 storm over all areas above the Latitude of Red River Landing with rainfall excess increased ten percent, followed four days later by the actual 3-16 January 1950 storm over all areas above Cairo, Illinois, and followed three days later by the 14-18 February 1938 storm transposed over all areas between Cairo, Illinois and Latitude of Red River Landing.</p> <p>The adequacy of the existing Mississippi River and Tributaries (MR&amp;T) PDF was reviewed and verified in a Corps of Engineers report entitled "Mississippi River 2011 Post Flood Assessment, Task 1 – Adequacy of MR&amp;T Project Design Flood," dated March 2013.</p> |

| Organization | Unique Identifier** | Theme(s)   | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|------------|--|--|
| EPA          | EPA-343             | 2011 Flood | The potential for more frequent activation of the floodway does not appear to have been considered in the needs statement, impacts assessment, or economic assessment. The EPA recommends these factors be given additional consideration in the DEIS.   | See response to EPA-342.   |
| EPA          | EPA-344             | General    | Executive Order 11988 requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. | The TSP complies with EO 11988 for the reasons specified in the Executive Summary.   |
| EPA          | EPA-345             | General    | The Interagency Task Force on Floodplain Management clarified the EO with respect to development in flood plains, emphasizing the requirement for agencies to select alternative sites for projects outside the flood plains, if practicable and to develop measures to mitigate unavoidable impacts.  | EPA is referring to the joint guidance on the "Unwise Use of Floodplains" dated 9 March 2012, which was not intended to supersede the missions, legislative requirements or policies of any agency. The purpose and need of the project has been revised to clarify the water-dependent nature of the activity and allow for a meaningful discussion of practicable alternatives. For this project, it is not practicable to select an alternative site outside of the floodplain and measures to mitigate unavoidable impacts were developed. |
| EPA          | EPA-346             | General    | The EO 11988 requires federal agencies to develop measures to minimize the impacts and restore and preserve the floodplain, as appropriate.  | See response to EPA-344.   |
| EPA          | EPA-347             | Flooding   | The DEIS should address: Will the proposed action create significant environmental impacts on communities above or below the new structure, since this is the last open floodplain on the lower basin of the Mississippi River?  | The DEIS has been revised indicating that no increase in flood risk will result to areas and communities after implementation of the project based on the location of the surrounding river communities and the corresponding protective Mississippi River Levee system.   |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|----------|--|---|
| EPA          | EPA-348             | Flooding | The DEIS should address: What is the expected increase in development post-project? The Introduction, Section S8 Floodplain Management, states there will be no increase in floodplain development and no development of residential areas, but doesn't address potential redevelopment of Pinhook post 2011 flood and conflicts with the statement made on page xxiii that "Indirect impacts from this action may include residential and commercial growth within the protected area." | See response to EPA-152 comment. The H+H appendix has been revised to include model tests. The DEIS has been revised to state that very little additional residential or commercial growth is expected in the Floodway after project construction. Populations are expected to remain very low.   |
| EPA          | EPA-349             | Flooding | The Advance DEIS acknowledges there will be some increases in Mississippi River elevation, but does not quantify increase in flood risk to those affected areas and communities.   | See response to EPA-152 comment. The H+H appendix will be revised to include model tests. DEIS will be revised to include a summary of the model test DEIS acknowledges the increase in stages within the New Madrid Floodway from operation with the 1500-foot closure as compared to current conditions. This is the main justification for the need to raise the elevation of the Setback Levee. |
| EPA          | EPA-350             | Flooding | Additionally, the assumptions concerning river elevation are based on potentially outdated modeling (pre-1990).  | See response to EPA-152 comment. The Corps is of the opinion that model results are still applicable. Theoretical storms used to calibrate the model and determine the project design flood are still valid and applicable.   |
| EPA          | EPA-351             | Flooding | It is unclear if the modeling accounted for effects of proposed pumping operations or only closure of the levee gap. See Appendix C page C-18.   | The DEIS has been revised with an EJ section to demonstrate no anticipated impact to flood risk.  |

| Organization | Unique Identifier** | Theme(s)   | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|------------|---|--|
| EPA          | EPA-352             | Flooding   | According to EO 12898, Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The document provides comment on some of the communities that will see beneficial changes with the proposed action; however, EJ communities adversely impacted by the 2011 flood are not adequately addressed. | The DEIS has been revised with an EJ section to demonstrate no anticipated impact to flood risk.   |
| EPA          | EPA-353             | Flooding   | Page 257, mentions there are no environmental justice issues, however concerns have been expressed by citizens in Cairo, Hickman, Paducah, Olive Branch, Cape Girardeau, and others that this project would increase flooding in their communities.   | EIS has been revised with an EJ section to demonstrate no anticipated impact to flood risk.  |
| EPA          | EPA-354             | Flooding   | The extent of flooding increase to all communities that might be impacted due to post project changes in hydrology needs to be provided.  | The DEIS has been revised indicating that no increase in flood risk will result to areas and communities after implementation of the project based on the location of the surrounding river communities and the corresponding protective Mississippi River Levee system.   |
| EPA          | EPA-355             | General    | The Advance DEIS is unclear if all the models have been officially certified.   | The DEIS has been revised to clarify that the ecological models have been certified or approved for use by USACE.  |
| EPA          | EPA-356             | shorebirds | Appendix H Part 2 states that results of the Shorebird model validation will not be available until November or December of 2014. Impacts to shorebird populations are expected to be significant. Will the project move forward before this and other models are validated?  | USACE proposes, to which the IEPR panel concurred, to validate the shorebird impact model after a Record of Decision is issued, while the process of formulating construction plans and specifications continues. At that time, still prior to construction, additional consideration will be given to shorebird impacts and to what, if any, additional mitigation may be appropriate |

| Organization | Unique Identifier** | Theme(s)   | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|------------|--|--|
| EPA          | EPA-357             | wetlands   | The EPA observes that there are several issues or criteria identified by the Model Certification Review Report that have not been addressed: HGM, Volume 3 Part 6.3, page 30 lists "risks associated with its [HGM] continued use." See also page v, pages 27-29, and Appendix B pages 1-29. | Although there were concerns with the HGM model, the model certification panel noted that it could be used in its current form. Please note page vi of the Model Certification Review Report for AR HGM Guidebook which states that: "During a teleconference on April 5, 2010 to discuss the review findings with USACE, the model reviewers were asked whether the guidebook was usable prior to making the suggested revisions (as described above). The model reviewers' response was that there could be continued conditional use. The guidebook has been in use for approximately five years and could potentially be used with the same level of accuracy under the condition that existing users will be the ones who continue to use the method. Upon further consideration of this question, the model reviewers agreed that, at the very least, the errors noted in the spreadsheets and the potential for errors in transferring data among field sheets and spreadsheets must be corrected to improve the ability of the models to yield accurate results." Corrections to the spreadsheet were made prior to model application by ERDC. |
| EPA          | EPA-358             | Fish       | The EPA observes that there are several issues or criteria identified by the Model Certification Review Report that have not been addressed: Fish, Volume 3 Part 6.1, page vi;   | The model certification panel supported immediate use of the model, provided three conditions were met (defensible HSI values, model developers run model, and coordination with experts) . All three conditions have been met.  |
| EPA          | EPA-359             | Waterfowl  | The EPA observes that there are several issues or criteria identified by the Model Certification Review Report that have not been addressed: Waterfowl Assessment Methodology, Volume 3 Part 6.2, pages iv-v;  | The Model Certification Review Panel (comprised of three independent experts), along with the USACE National Ecosystem Planning Center of Expertise, found that the Waterfowl Assessment Methodology (WAM) is of high technical quality and usability and on that basis certified it for use in the Mississippi Alluvial Valley. The Panel's recommendations to alter the model, to give it greater utility for more widespread use in future planning, are noted. USACE proposes to use WAM, as certified.  |
| EPA          | EPA-360             | shorebirds | The EPA observes that there are several issues or criteria identified by the Model Certification Review Report that have not been addressed: Shorebirds, Volume 3 Part 6.4, page ii and page v.  | The three issues raised in the Model Certification Review Report are addressed in section 5.1.3 (issues one and three) and in App. M, pt. 4 (issue two). Further consideration of these issues will occur during the shorebird impact model verification process   |



| Organization | Unique Identifier** | Theme(s)    | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|-------------|---|--|
| EPA          | EPA-361             | uncertainty | Page x: The documents states that risk and uncertainty associated with each of the models as well as future mitigation tracts have been qualitatively discussed and quantified where appropriate. Where in the document did this occur?   | Section 6 addresses risk and uncertainty.  |
| EPA          | EPA-362             | General     | The EPA comments from our March 8, 2010 letter to Gregg Williams have not been addressed. See PDF Page 93-105 in Volume 2 Part 2 Interagency Correspondence and Memorandums for Record.   | The referenced letter was submitted to the Corps commenting on the Project Work Plan. The Corps' intent of requesting interagency feedback was to ensure that the IEPR panel was aware of any concerns contrary to that of the Corps. Therefore, EPA's comments were fully considered. Ultimately, the Corps and the IEPR panel reached concurrence on the overall methodology (see Phase 2 IEPR Addendum).  |
| EPA          | EPA-363             | General     | The EPA has requested that the HGM sample points GIS layer and copies of the HGM data forms or spreadsheet of data collected at each sampling point be provided; however this information has not been provided to date. This information is needed in order to assess the conclusions of the DEIS. | Requested information has been sent.   |
| EPA          | EPA-364             | wetlands    | The HGM functional assessment method tends to blend complex concepts making it complicated to use, and difficult to interpret the results generated.  | The Corps concurs that the HGM assessment is complex and may be complicated to use and difficult to interpret results for those not familiar with wetland hydrogeomorphic processes. To address this risk, the Corps had the model independently reviewed prior to conducting the analysis, contracted with model developers to conduct the project-specific analysis, and had all of the results subject to the Independent External Peer Review. |
| EPA          | EPA-365             | wetlands    | The DEIS should clearly describe for the public what the HGM results mean in terms of wetland functional impacts and how they will be mitigated.  | The DEIS describes wetland function (as assessed by HGM) in Section 3.8.1.   |

| Organization | Unique Identifier** | Theme(s)            | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|---------------------|---|---|
| EPA          | EPA-366             | wetlands            | Pg 38 (PDF page 39) Table 23: Functional Losses in FCUs Associated with the Authorized Project within the New Madrid Floodway, and a Calculation of Mitigation Acres Based on Mitigation Annualized FCIs from Table 22. There is an error in the table and text. In the last column the highlighted cell says that the highest value for CD is 431, however the cell for maintain plant communities 514 should be highlighted because it is the highest value. The description in the table also needs to be corrected.   | Table 23 demonstrates impacts for the authorized project. EPA is correct that the wrong cell is highlighted. However, the correct cell is highlighted for the table describing mitigation needs for the Tentatively Selected Plan (Table 29). Although there is a mistake in the table, it does not influence overall mitigation needs since this table was not used to determine mitigation needs for the tentatively selected plan. Regardless, the report's author has been contacted and the appendix will be revised prior to public review of the DEIS. |
| EPA          | EPA-367             | wetlands            | The page also states: "It is assumed that mitigation is taking place within the 5-year floodplain, in large (1200 acre) well-connected tracts, but that no structure has been installed to restore flooding. Thus, the mitigation is maturing while subject to the altered hydrology associated with the Authorized Project. This leads to a much smaller functional lift per acre (or Annualized FCI), and larger acreage requirements for mitigation to offset the losses associated with the project." The mitigation amount should be increased to take into account the loss of hydrology within the project area. | The FCU mitigation requirements assume post-project hydrology (frequency, duration, etc). The "smaller" functional lift has been considered and the appropriate amount of mitigation is proposed.   |
| EPA          | EPA-368             | Mitigation - Policy | Standard practice of the Missouri IRT is to require 10:1 mitigation ratio for preservation and a 2:1 ratio for enhancement activities. Any HGM FCU calculations need to take this into account.   | See EPA 138   |

| Organization | Unique Identifier** | Theme(s)            | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|---------------------|--|---|
| EPA          | EPA-369             | Mitigation - Policy | Preserved areas function units should be reduced by a factor of 10, and any enhancement areas function units need to be reduced by half. When taking this into account the project is lacking mitigation, and recalculations to mitigation need and the cost benefit analysis need to occur. | See EPA 138   |
| EPA          | EPA-370             | wetlands            | HGM calculations for removing the flood pulse could not be found in the document but should be calculated.   | The functions assessed in the HGM model are provided in Section 3.8.1.4, as well as in Appendix E, Parts 5 & 6. The term flood pulse is not necessarily a function, rather it is a concept that includes a spectrum of geomorphological and hydrological conditions. The functions assessed by HGM are representative of that spectrum, which were calculated and used to determine impacts and mitigation necessary to replace the lost functions as a result of project implementation. |
| EPA          | EPA-371             | wetlands            | The number of acres that no longer have the detain floodwater function should be quantified and added to the mitigation needs.   | As stated in Section 4.8.1, the project results in a wetland sub-class shift from riverine (provide the detain flood water function) to flats (do not provide the detain flood water function). Mitigation is proposed to compensate for this impact. In fact, this is the greatest impact to the wetland resource category and what requires the greatest amount of wetland mitigation.  |
| EPA          | EPA-372             | wetlands            | The Corps has limited the area of impact to investigate in the DEIS; however, the statement on Volume 3 Part 6.3, pages 14-15, supports the need to expand calculation of impacts to a larger area to take into account extreme events.  | See comment responses to EPA357 & 373.  |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|----------|--|--|
| EPA          | EPA-373             | wetlands | Pages B-5 through B-6 of Volume 3 Part 6.3 state that HGM does not adequately assess variables of flood duration and frequency in order to track changes in wetland condition. Considering that flooding extent and duration are crucial variables for evaluating impacts and proposed compensatory mitigation for this project, HGM is not appropriate. | <p>While the model certification panel did suggest several improvements to the HGM model, the expert panel concluded that the guidebook is usable once the spreadsheet errors and data transfer issues are corrected, which has been done. The HGM analysis clearly shows impacts to wetlands associated with the hydraulic (and hydrologic) modifications of the project. The vast majority of these involve a change in flood frequency that it actually changes the subclass of the wetland from a river connected subclass (typically Riverine Backwater) to an unconnected subclass (Flat), and a loss of the riverine backwater functions associated with shift in subclass. This functional loss was addressed in the mitigation requirements, despite the fact that in most cases the wetlands are still present on the ground, and there was a gain in functions associated with the increase in acreage in the Flats subclass. These shifts, as well as other project impacts (direct clearing/filling) were used to calculate mitigation requirements. The remaining Riverine Backwater wetlands were also subject to a more modest decrease in FCIs. These are the Riverine Backwater wetlands closest to the channel, where the impacts of the project were least severe. This modest drop in FCI is the smaller impact of the project; the majority of the wetland functional loss in the New Madrid Floodway is due to the shift of large acreages of wetlands completely out of the Riverine Backwater subclass. River-dependant functions, such as the ability to Detain Floodwater, were completely lost for these wetlands. Since the Corps calculated mitigation for wetlands based on the greatest functional loss, all of these wetlands were treated as if they were completely converted to non-wetland, despite the fact that they are still in the landscape, and providing some functions. Additionally, the Phase II IEPR Panel (Volume 3, Part 3) stated that; "The IEPR panel recognizes that the HGM approach, even with its shortcomings, is one of the few methods available to compare wetland functions."; "Most importantly we believe that the Corps is too far along in using and reusing the HGM technique to abandon it now, and there is no other appropriate model out there, save for ecosystem simulation models, that could provide any resolution needed for mitigation ratios."; "We could not agree more that a system was needed to divide the wetlands into hydrological categories and the HGM system does that part fairly well."; and finally, "We appreciate the answers that the Corps provided to the panel on these recommendations and have no further questions on wetland area determination."</p> |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|----------|---|---|
| USFWS        | FWS-1               | General  | Thank you for the January 2013 IAT advance copy of the Draft Environmental Impact Statement (DEIS) for the St. Johns Bayou and New Madrid Floodway Project in southeast Missouri. Because of workload, the U.S. Fish and Wildlife Service (Service) has been able to conduct only a cursory review of the main body of the DEIS; however, we believe it is important to provide these preliminary comments in the interest of addressing our outstanding resources concerns as efficiently as possible. The Service will continue our more detailed review and will forward those comments within the next month. | This is an USFWS statement. No response required.   |
| USFWS        | FWS-2               | General  | The document appears to discredit previous and continuing Service input regarding the value of fish and wildlife resources within the project area.   | The USACE has fully considered all input and did not discount USFWS input. Previous USFWS input was used to determine the expertise required for IEPR. For example, previous FWCA reports identified wetlands, shorebirds, waterfowl, terrestrial wildlife, and fish spawning and rearing habitat as significant resource categories. Nationally recognized experts were chosen independent of USACE from each of these fields to serve on the IEPR panel. These experts commented on the state of previous documentation (Phase 1), the Project Work Plan (Phase 2), and the draft EIS (Phase 3). Based on their comments, substantial changes were made to the project and project documents. However, many aspects of previous FWCA documentation are no longer applicable because the analysis has undergone significant revisions. |

| Organization | Unique Identifier** | Theme(s) | Comment (may be paraphrased or summarized)  | Response  |
|--------------|---------------------|----------|---|---|
| USFWS        | FWS-3               | Wetlands | The document mischaracterizes Service input regarding recent updates to the National Wetlands Inventory, a long-standing, nationally recognized mapping tool for wetlands data. | <p>In their draft FWCA report, USFWS reported that in 2011 the National Wetlands Inventory (NWI) conducted an update of wetlands in the project area, and included wetlands in agricultural production according to their current methodology developed in response to requests from stakeholders to capture restorable lands in their database. The update was only conducted for the St. Johns Bayou and New Madrid Floodway immediate project area and was not conducted in other parts of Missouri including the adjacent batture lands. Although the FWCA uses the term “wetlands in agricultural,” in previous coordination with USFWS and their contractors, these areas were classified as “restorable wetlands.” According to the USFWS NWI website, for special projects, the NWI has inventoried potential wetland restoration sites. These sites include former wetlands that have been drained or filled but are still in a condition where restoration is possible (Type 1) and existing wetlands that have functions impaired by ditching, excavation, impoundment or cultivation (farmed wetlands). Type 1 sites are identified using soil maps and locating hydric soil areas that are not mapped as NWI wetlands and do not have buildings or structures built upon them. Type 1 sites are mostly cropland on hydric soils, but may also include former wetlands that have been used as dredge material disposal sites and other impoundments. In addition, the wetland classification code for NWI farmed wetlands, PEM1Adf, is now obsolete for Missouri and has been replaced by PEM1Ad, which removed the “farmed” classification and relies on the presence of emergent herbaceous hydrophytes, which are usually dominated by perennial plants and unlikely to be found on an actively farmed agricultural field. Therefore, additional clarification is requested from the USFWS on whether the farmland in question are restorable wetlands (former wetlands that have been converted to cropland) or existing wetlands. Furthermore, there is a discrepancy with the USFWS estimates with results that are furnished to Congress. USFWS systematically monitors wetland trends for the conterminous 48 states and reports the results to Congress. The USFWS (Dahl, 2011) states the following: “Ephemeral waters, which are not recognized as a wetland type, and certain types of “farmed wetlands” as defined by the Food Security Act were not included in this study because they do not meet the Cowardin et al. definition.” Although USFWS stated that agricultural areas do not meet the Cowardin et al. definition of wetlands in reports going to Congress, and contrary to previously submitted data, they indicate that agricultural areas in the project area are wetlands in their FWCA (USFWS, 2012). There appears to be a large discrepancy regarding wetland estimates in USFWS reports that are submitted to Congress or USFWS is utilizing inconsistent methods in its analysis. The USFWS CAR offered no explanation on why agricultural lands do not meet the Cowardin et al. definition on a national scale, but somehow meet the definition in the project area. Most scientific literature reviewed for the completion of the draft EIS does not include agricultural land in their description of wetlands. Additional clarification is requested from the USFWS.</p> |

| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|-----------------------------|--|---|
| USFWS        | FWS-4               | Mitigation - Science        | The proposed mitigation actions lack scientific validation.  | The Corps finds the proposed mitigation is scientifically valid for the following reasons: (1) mitigation is based on the same models that were used to determine impacts. The models were developed by subject matter experts and each model underwent peer review, (2) the model developers were the ones that conducted the project-specific analysis that was used to determine impacts and quantify mitigation, and (3) the project has undergone three separate phases of Independent External Peer Review.   |
| USFWS        | FWS-5               | Mitigation - Implementation | The proposed mitigation actions are logistically infeasible.   | The Corps disagrees and finds that mitigation is logistically feasible for the following reasons: (1) Mitigation is based on a watershed approach (Section 6); (2) mitigation methods (reforestation, ecologically designed borrow pits, inundated agricultural fields) are all common practices that are utilized throughout the Lower Mississippi Valley; (3) the project has undergone extensive IEPR that resulted in major revisions to the document to ensure that impacts and mitigation are based on scientifically valid assumptions; (4) continued coordination with the interagency team will take place throughout the acquisition, planning, and implementation of tract-specific mitigation plans; (5) risk has been identified and monitoring is proposed to reduce the level of risk to acceptable levels; and (6) based on the monitoring needed to address the risk, the project will be adaptively managed to rectify any adaptive management deficiencies.            |
| USFWS        | FWS-6               | Mitigation - Science        | The proposed mitigation actions are inadequate both in kind (i.e., batture lands for lost floodplain and backwaters) and amount. | Consistent with the methods in which impacts were determined, mitigation is based on underlying land use ( <i>e.g.</i> , forest, agriculture, lake, etc.) and hydrology ( <i>e.g.</i> , frequency, depth, duration, etc.). Thus, mitigation is based on habitat units or functional units, not on an acre for acre floodplain lost. The utilization of batture land as mitigation is discussed in Section 5. Furthermore, the utilization of batture land as mitigation has been discussed numerous times with the IEPR panel (Phase 2 IEPR Comment 3 and 4 and Phase 3 Comment 9). The Corps recognizes that FWS's position is that the only true way to mitigate this lost function in-kind is through restoration of other disconnected floodplain. However, such mitigation is extremely expensive, in-feasible, and outside the scope of what can be accomplished with this project. FWS's position regarding this variable will be disclosed in the mitigation section of the DEIS. |

| Organization | Unique Identifier** | Theme(s)            | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|---------------------|--|--|
| USFWS        | FWS-7               | Mitigation - Policy | Based on descriptions provided in the DEIS, the proposed mitigation does not appear to comply with the current Mitigation Rule under the Clean Water Act.                                  | Section 5 provides a Compensatory Mitigation Plan that complies with both Section 2036(a) WRDA 2007 guidance as well as the Mitigation Rule. That section discusses all twelve elements required by the mitigation rule as well as the subsections indicated in the implementation guidance.   |
| USFWS        | FWS-8               | Adaptive Management | The Adaptive Management program does not include details on what actions will be taken to rectify mitigation measures that do not work.  | The adaptive management has been revised. Adaptive management discussion has been split into two distinct phases. Phase 1 Adaptive Management will occur on tract-specific mitigation sites. Section 5 of the DEIS explains the adaptive management actions in regards to tract-specific mitigation measures. Additional information has been included regarding monitoring, assessment, performance measures, targets, and thresholds that would trigger when an Adaptive Management Action should be implemented. After a determination that an individual tract(s) has reached ecological success, an adaptive management watershed approach (Phase 2) will be used to demonstrate that all of the individual mitigation parcels are working synergistically to provide a watershed mitigation effect. Phase 2 Adaptive Management is discussed in Section 7. |
| USFWS        | FWS-9               | Adaptive Management | (See above comment for context). This would include additional lands and changes in the project operations and the effects to the resource as well as the cost and benefit of the project. | Ecological thresholds which would trigger specific adaptive management actions are further refined and described in the Phase 1 Adaptive Management. Potential adaptive management actions could include things such as additional land purchases, modifying or restoring mitigation features, and other ecosystem modifications to enable the project to meet ecological success.   |
| USFWS        | FWS-10              | Flooding            | The DEIS does not address cumulative impacts of lost flood water storage capacity of the floodway on the surrounding river communities under the preferred alternative.                    | The DEIS has been revised indicating that no increase in flood risk will result to areas and communities after implementation of the project based on the location of the surrounding river communities and the corresponding protective Mississippi River Levee system.   |
| USFWS        | FWS-11              | 2011 Flood          | The DEIS does not characterize the impacts of the 2011 flood on both the floodway and adjacent river reaches.  | The DEIS has been revised to characterize the impacts of the 2011 flood. Please see Appendix L - 2011 Post Flood Report.   |
| USFWS        | FWS-12              | IEPR                | The Independent Expert Panel Review urged the Corps to use actual economic and flood data in evaluating project effects, and not rely solely on models results.                            | As part of the IEPR comment/response process, the Corps responded to the IEPR panel that Corps guidance (ER 1105-2-100) requires the utilization of "flood free" yields in evaluating potential projects. Therefore, the economic analysis is based on an economic model that accounts for the potential risk of flooding. (See Phase 3 IEPR, Comment/Response 1, Recommendation 3).   |



| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)   | Response   |
|--------------|---------------------|--------------|--|--|
| USFWS        | FWS-13              | Connectivity | The Service agrees that the river-floodplain connection has been permanently eliminated for the St. Johns Bayou Basin. | The Fish and Wildlife Service has stated that the connection between the Mississippi River and St. Johns Bayou Basin has been permanently eliminated for the Mississippi River and that the only way to mitigate in-kind for this lost function in the New Madrid Floodplain is through restoration of other disconnected floodplain. The Corps acknowledges that construction of the closure levee and flood control structure in the St. Johns Bayou Basin has impacted connectivity, however, fish have been documented moving from the Mississippi River through the culverts into the St. Johns Bayou Basin. In addition, the river-floodplain connection cannot be permanently eliminated. Groundwater connections will always remain. The Phase 2 IEPR Panel stated, "High river stages mean high groundwater and backwater effects, if only due to local runoff and precipitation, in the sites themselves. Floodplains can never be totally isolated from the rivers and streams that used to nourish them, even if the nourishment has been replaced by more subtle backwater and groundwater effects" (See Phase 2 IEPR Comment/Response 3, Volume 3 Part 3). |
| USFWS        | FWS-14              | General      | The Service agrees that agricultural land use has reduced both the quantity and quality of the physical habitat.       | The Corps concurs that agricultural land use has reduced both the quantity and quality of the physical habitat.  |

| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|--------------|---|--|
| USFWS        | FWS-15              | Connectivity | The Service strongly disagrees with the Corps pertaining to the ecological and biological importance of the hydrologic connection of the New Madrid Floodway with the river. There is a huge volume of scientific literature on the river-floodplain continuum and the resource effects when the connection is eliminated. This issue has been extensively studied along the Lower Mississippi River, an area which has experienced significant impacts to the river-floodplain ecosystem by levees, control structures, drainage and land use changes. | The FWS' position is that the hydrologic connection between the SJBB and the Mississippi River has been lost, whereas USACE believes the flood pulse provides some value in that basin. This is the main justification for why the Corps has undertaken a suite of environmental models to quantify the value of the flood pulse in the project area. Additionally, past anthropogenic influences in both basins in the project area, including extensive drainage that has resulted in the conversion of 80% of the project area to cropland, further limit the ecological productivity of the flood pulse in both basins. FWS has previously acknowledged this loss in their 18 January 2013 response. The Corps has to measure this loss in terms of the habitat presently available, access to the remaining habitat, and recognition that agriculture has reduced both the quantity and quality of habitat in the floodplain. Additionally, the Corps proposed measures to minimize the impacts by managing a level of connectivity between the Mississippi River and the New Madrid Floodway during periods of the year that are beneficial to ecological resources, mitigating impacts in areas that would still be connected (i.e., post-project five year flood frequency), and restoring the hydrologic connection to Big Oak Tree State Park. |
| USFWS        | FWS-16              | Connectivity | The 1,500 foot gap in the frontline levee of the New Madrid Floodway constitutes the only remaining place in the State of Missouri where the river is connected to its floodplain.  | The New Madrid Floodway is not the only remaining place in the State of Missouri where the river is connected to its floodplain. Likewise, it is not the last remaining natural backwater area along the Mississippi River. This issue is further addressed in Section 4.19.   |
| USFWS        | FWS-17              | Connectivity | (See above comment for context). Furthermore, there are few similar areas left throughout the Lower Mississippi River.  | There are 320,000 acres (500 square miles) of backwater area located within 120 miles of the project area (See Table 4.98).  |
| USFWS        | FWS-18              | General      | The Service fully acknowledges that alterations in the form of levees, drainage, and agriculture have affected the quantity and quality of habitat in the Floodway.   | The Corps concurs that conversion to cropland limits the available habitat in the project area.  |

| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)   | Response  |
|--------------|---------------------|--------------|--|---|
| USFWS        | FWS-19              | Connectivity | Based on sound scientific information, it is clearly evident to the Service and others that the hydrologic connection between the river and the Floodway is the principle biological driver.   | The Corps recognizes and documents the role of existing flood pulse to the project area ecological function. However, the flood pulse value is limited due to the degree of past alterations in the project area (See DEIS Section 3.5). The role the flood pulse has on the project area was also extensively modeled through environmental models, potential impacts were qualitatively described and quantified where appropriate, and compensatory mitigation was proposed for adverse impacts. |
| USFWS        | FWS-20              | Connectivity | (See above comment for context). This occasional hydrologic connection is responsible for maintaining a full spectrum of natural resources typically associated with a river-floodplain landscape (e.g., wetlands, fish, waterfowl, shorebirds).   | See Response to USFWS-15  |
| USFWS        | FWS-21              | Connectivity | The value of the hydrologic connection was further validated in a recent study of the Floodway after breach of the Birds Point Levee in May 2011 (Phelps, Tripp, and Herzog 2012. Temporary Connectivity: A Comparison of the New Madrid Floodway and the Adjacent Main River, Big Rivers and Wetland Field Station, Missouri Department of Conservation). | See response to USFWS-22.   |

| Organization | Unique Identifier** | Theme(s)                    | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|-----------------------------|---|--|
| USFWS        | FWS-22              | Connectivity                | Phelps, Tripp, and Herzog 2012. Temporary Connectivity: A Comparison of the New Madrid Floodway and the Adjacent Main River, Big Rivers and Wetland Field Station, Missouri Department of Conservation documented higher levels of fish diversity, density, and growth in the Floodway than in the Mississippi River. | The Corps appreciates the information provided by USFWS. The Floodway will continue to be operated with the proposed additional features to the project. Temporary changes to fish communities as a result of Floodway operation, particularly in comparison to fish communities in the Mississippi River, would still occur. Although short term diversity may increase in the floodway (any area off the main channel that is flooded will attract fish), widespread agricultural influences and pervasive adverse conditions in the floodway streams (low water, sedimentation), will eventually return the fish assemblage to pre-operation levels. As stated in Section 3.8.5, agriculture limits ecological value in delta streams and surrounding floodplains. Without suitable habitat (forested areas, riparian vegetation, stable streams/ditches, structure, and adequate depth/flow), meaningful and sustained changes in biota would not occur. |
| USFWS        | FWS-23              | General                     | Based on our abbreviated review, the Service believes the Corps' preferred alternative continues to result in unacceptable losses to nationally significant fish, wildlife, and aquatic resources.  | FWS's continuing position that project cannot be adequately mitigated is noted. The DEIS contains the Corps' analysis of mitigation of significant fish, wildlife and aquatic resources impacts of the project. Furthermore, the DEIS has undergone additional revisions to clarify impacts of the project to fish, wildlife, and aquatic resources.   |
| USFWS        | FWS-24              | Mitigation - Science        | Notwithstanding the Independent Expert Panel Review process, the science of wetlands and big rivers ecology, as well as an ever increasing community of practice in habitat restoration provide no valid justification that the proposed resource loss can be mitigated.  | The Corps is of the opinion that the proposed mitigation is scientifically valid. See FWS-4.   |
| USFWS        | FWS-25              | Mitigation - Implementation | Small projects are difficult to mitigate, and the scale of this project is one of the largest flood damage reduction projects proposed in the nation.   | FWS's concern with the size of this project is noted. However, the Corps has documented that proposed compensatory mitigation is commensurate with unavoidable impacts and that adequate safeguards are in place to ensure mitigation occurs concurrent with project impacts.  |

| Organization | Unique Identifier** | Theme(s)     | Comment (may be paraphrased or summarized)  | Response   |
|--------------|---------------------|--------------|---|--|
| USFWS        | FWS-26              | Alternatives | As noted in the Assistant Secretary of the Interior's August 26, 2011, letter to ASA Darcy, we continue to urge the Corps to focus on flood damage reduction project features that protect public health, safety and infrastructure.  | Project specific objectives have been clarified. In addition to protecting public health and safety, objectives for this project also include a reduction in agricultural flood damages.   |
| USFWS        | FWS-27              | Alternatives | The Service continues to strongly advocate the Corps adopt the St. Johns Bayou-only alternative to address flood protection needs of the communities and public infrastructure (e.g., I-55) in that basin.  | noted  |
| USFWS        | FWS-28              | Alternatives | We believe that adopting a St. Johns Bayou-only alternative will avoid another exhaustive, repetitive cycle of rebuttal between the federal agencies, and most efficiently and effectively address the most pressing, long-standing flood control issues in the project area. | In addition to the alternative recommended by the Service, the DEIS analyzes other alternatives as well. A final decision regarding on how to proceed with this project will be made after the public has the opportunity to provide comment on the Final EIS. It would be premature for the Corps to make a determination at this time. |